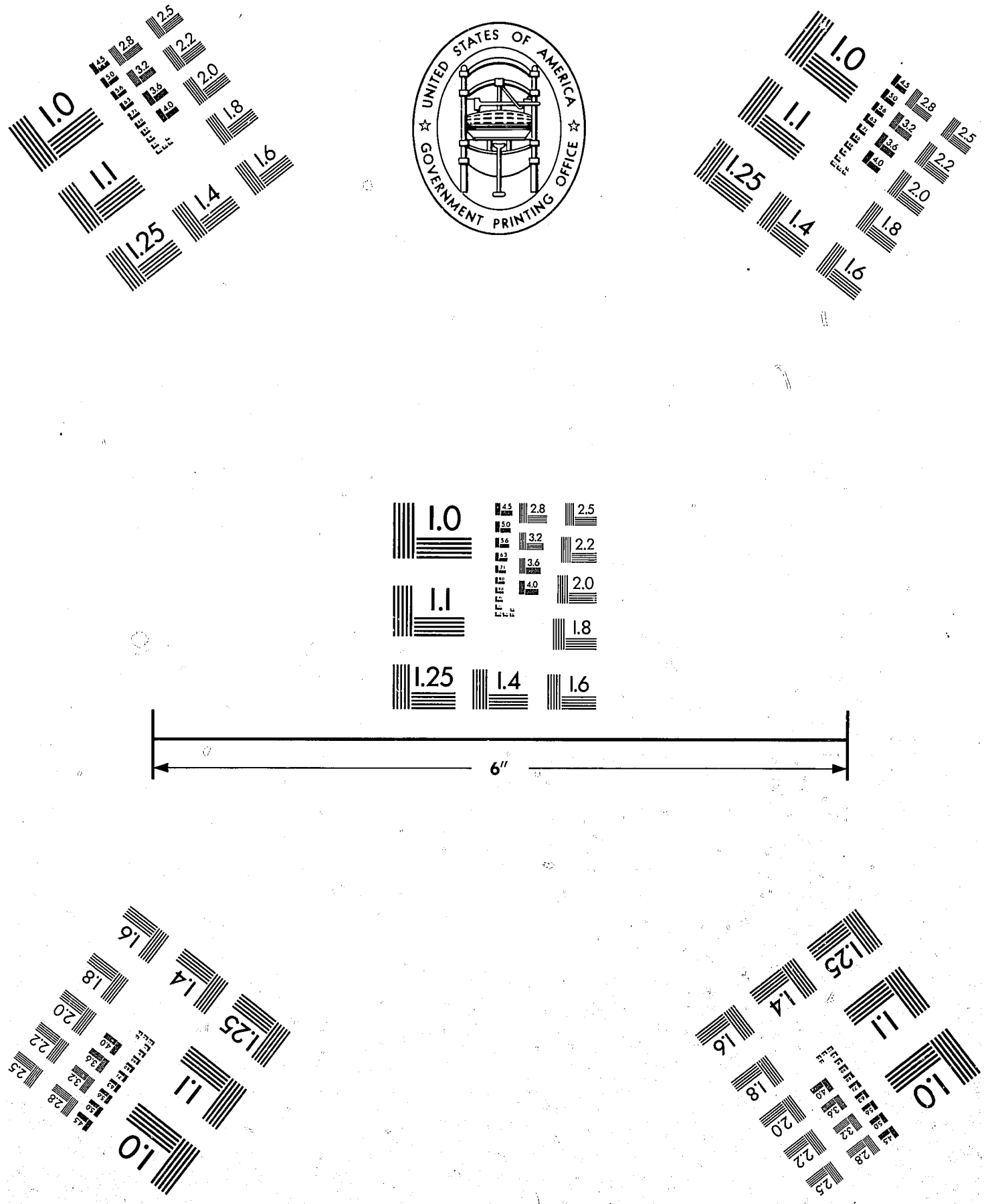
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ASSESSMENT OF STATE AND LOCAL NOTIFICATION REQUIREMENTS FOR TRANSPORTATION OF RADIOACTIVE AND OTHER HAZARDOUS MATERIALS

FINAL REPORT

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January 11, 1985

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ASSESSMENT OF STATE AND LOCAL NOTIFICATION REQUIREMENTS FOR TRANSPORTATION OF RADIOACTIVE AND OTHER HAZARDOUS MATERIALS

1.0 INTRODUCTION

State and local laws requiring notification for shipments of radioactive and other hazardous materials have become increasingly common and controversial during the last decade. Such laws are seen by their proponents as essential for planning and emergency response, while their opponents view them as unnecessary and intrusive. The debate over the value of notification requirements has often been hampered by the lack of information about the extent and nature of these laws. This report is intended to present factual information about notification laws in order to facilitate more informed discussion.

An analysis of notification requirements must recognize the historical context that affects such laws. With few exceptions, most statutes and regulations requiring notification of shipments of radioactive or other hazardous materials are of quite recent origin, and have been adopted as a consequence of the increasing frequency and awareness of such shipments in the United States. Many citizens perceive such shipments to be dangerous, and these perceptions have been reinforced by occasional accidents involving hazardous materials. State and local policymakers have responded to these concerns by passing laws requiring shippers, carriers, or receivers of such commodities to provide information about these shipments.

At the same time as these state and local laws were being adopted, the federal government was changing its regulations for shipments of radioactive and other hazardous materials. Notification and recordkeeping standards were imposed for particular commodities, and routing requirements were established. In addition, the U.S. Department of Transportation (DOT) provided funding for a series of demonstration projects in different areas of the country to investigate the magnitude and possible risks of hazardous materials transportation, and to develop plans and procedures to respond to emergencies. However, some state and

local governments, backed by various coalitions of citizens, environmental groups, and other concerned parties, felt these federal actions were still inadequate. These governments approved statutes or imposed regulations that mandated stricter standards for shipments of radioactive or other hazardous materials. On the other hand, shippers and carriers of such materials complained that the state and local requirements were burdensome or impossible to meet and were unconstitutional infringements on interstate commerce.

The federal government has taken some steps to overturn certain state and local notification laws.[1] In January 1983, the DOT ruled that certain sections of a Covington, Kentucky ordinance that required advance notification for shipments of hazardous materials were inconsistent with federal laws.[2] The Department later reviewed nine other state and local requirements and found seven of them to be inconsistent with federal laws.[3] These seven included requirements imposed by the states of Michigan and Vermont; the New York Thruway Authority; the Ogdensburg Bridge and Port Authority, New York; the Thousand Islands Bridge Authority, New York; St. Lawrence County, New York; and Jefferson County, New York. These actions have provoked considerable political controversy.

State and local notification requirements for shipments of hazardous and other radioactive materials are thus an area of intense policy interest. This report is intended to assess the extent, nature, and effects of such laws so that policymakers can make informed decisions about notification requirements.

1.1 NOTIFICATION REQUIREMENTS IN CONTEXT

State and local governments usually indicate that notification requirements are a way to gather information about shipments of radioactive and other hazardous materials. This information can be used for a variety of purposes. Many governments want the information in order to facilitate planning. Others use the information to alert emergency response units or to arrange escorts. Some governments believe they need to be aware of shipments so they can respond to requests for information from elected officials, the press, and the public. A few notification

requirements are used to arrange inspections for shipments, while others are designed to assist in tracking shipments of hazardous materials. Some governments indicate that the information from notification requirements is used for a combination of these activities.

It is less often noted that there are many ways to collect information about these shipments. In fact, there are at least seven distinct approaches to gathering information, of which only the first four can be labeled as notification. Although three of these four approaches will be the focus of this report, it is useful to review all seven types.

1. Prenotification requires shippers or carriers to provide information about shipments in advance. This advance notice can vary from the time the vehicle arrives at the boundaries of the jurisdiction to several days or even weeks in advance. Prenotification is the most common of all information gathering approaches. It is favored by state and local governments because it allows information about each shipment to be obtained in advance and therefore allows emergency response agencies to be alerted. It is opposed by carriers as burdensome and inconvenient. Carriers are particularly concerned that if many jurisdictions have prenotification requirements it will be expensive, difficult, and perhaps even impossible to schedule shipments of hazardous materials.

2. Per trip reporting requires shippers, carriers, or receivers to report on each trip after it is completed. This often involves filing of a manifest or other shipping papers. This system allows state and local governments to track shipments and quantify flows of materials. Per trip reporting is helpful in developing emergency preparedness plans, but is not useful as a tool to alert emergency response units. Carriers and shippers have indicated that it is less burdensome than prenotification since it avoids delays and scheduling complications, although paperwork requirements are still significant.

3. Periodic reporting requires shippers, carriers, or receivers to file reports summarizing shipments on a regular basis, with annual reports being the most common. Some of these reports are required as a part of a licensing or registration application while others are independent requirements. Periodic reporting allows governments to understand the

types and quantities of materials shipped through their jurisdictions and therefore is useful for planning. It is of little value in tracking specific shipments and cannot be used to alert emergency response groups. It imposes some recordkeeping burdens on carriers and shippers, although these are usually regarded as less burdensome than prenotification.

4. Route plan filing requires shippers or carriers to file plans about the routes they intend to use. These plans can be filed before or after the shipment occurs. This approach allows governments to collect information about the frequency and location of shipments, although it does not necessarily inform them about the exact dates or times of shipments. This information can be used for emergency response planning. Route plan filing imposes some burdens on shippers or carriers, since they must plan routes and notify governments. Although this approach is often thought of separately, it is actually a special case of the other types of notification requirements. Route plan filing is therefore not discussed separately in this report.

5. Highway counts can be used to identify the number and general types of shipments through a particular area. Observers are stationed along a highway and count the number of vehicles carrying placards identifying their contents as hazardous. In addition, the type of placard used allows the shipments to be subdivided into broad categories such as flammable, corrosive, or oxidizing materials. This system allows the types and number of shipments to be evaluated without any burden on carriers. It does, however, assume that shipments are properly placarded, and does not allow specific commodities and quantities to be identified. More specific information about commodities can be obtained when an identification number (known as a UN number) is displayed, but these are often difficult to observe during roadside highway counts.

This approach was used as part of a demonstration project in an eight county region in central Indiana between 1981 and 1983.[4] The project was intended to develop plans to prevent hazardous materials emergencies and to improve capabilities to respond to such emergencies. In order to identify the scope and nature of the problem, observers were stationed at 22 sites in the Indianapolis area. These observers counted and classified

placarded vehicles. The results were then used to prepare emergency response procedures for transportation accidents.

6. Weigh station counts are analogous to highway counts. Instead of using observers, officials at weigh stations tally placarded shipments as they are weighed. Weigh station counts are probably cheaper and easier than highway counts, since trained personnel are already in place. However, coverage of shipments is usually less comprehensive, since weigh stations have fixed locations and are often closed part of the time.

Weigh station counts were used by a demonstration project in the San Francisco Bay Area.[5] California Highway Patrolmen counted placarded loads and divided them into broad commodity groups. These results were instrumental in supporting the recommendations of the demonstration project, which included expanded hazardous materials response teams, improved training, expanded local financing for emergency response programs, and Hazardous Materials Planning Advisory Committees in each county.

A similar approach was used in New Mexico to collect information on the extent and nature of hazardous materials shipments in August and September 1983.[6] Information was collected about these shipments at 19 ports of entry and internal locations. Personnel at these locations filled out forms describing the type and quantity of material on all placarded shipments, along with the shipment's origin and destination and the route being used. The results will be used to increase understanding of such shipments.

Weigh station counts were also used by another demonstration project in New Orleans.[7] The State Police counted placarded shipments for two days to identify the number and types of loads moving through the city. Slightly over 10 percent of all truck trips involved hazardous materials. These results corresponded quite closely to an earlier effort by the City Planning Commission that used existing surveys of traffic volumes for truck and rail shipments, and applied national estimates of the percentages of such shipments that involved hazardous materials to calculate the number of hazardous shipments moving through New Orleans.

7. Carrier or industry surveys can be distributed to collect information about the number and type of shipments. Such surveys allow detailed data to be gathered without infringing on commerce. Voluntary compliance is needed, however, and in most cases response rates seem to be low. This technique appears to work relatively well with railroads since there are few of them in any one region and most keep such information in computerized files. The approach is much less useful for truck shipments since there are more carriers and their recordkeeping systems are usually less sophisticated. It is also possible to survey major industrial users of hazardous materials to gather information about the types and quantities of materials they use and the number of shipments they receive.

This general approach was used in several DOT-sponsored demonstration projects. An excellent example is a project conducted in Memphis.[8] Before the demonstration project started, the city Fire Department formed a Hazardous Materials Task Force in cooperation with local industries and educational institutions. The Task Force surveyed 255 companies using hazardous materials, and developed considerable information about the types and quantities of materials being used in the area. They also collected information from railroads, which revealed that 3.6 million tons of hazardous materials were shipped through Memphis each year. A survey of local trucking firms was distributed to complement the railroad survey, but a response rate of 41 percent meant the results had questionable value. The results of the Task Force's work contributed significantly to the subsequent demonstration project.

A demonstration project in Niagara County, New York relied almost exclusively on a survey of industries.[9] Firms using hazardous materials were identified from the county land use directory, the state industrial directory, and local telephone books. A survey form was distributed to each of these companies that requested information about the amounts and types of hazardous materials they used, how many loads they received, and what routes these loads followed. Materials were classified either by name or by the type of placard used. A response rate of 35 percent was obtained, but since most of the larger firms responded the results were relatively accurate. Additional information on gasoline shipments was

received from the New York Energy Department. This demonstration project revealed that gasoline is by far the most common hazardous material shipped in the county. In addition, about 15 percent of the shipments involved hazardous waste, since Niagara County has three major toxic waste treatment and disposal sites.

A similar approach utilizing surveys of industries was used in a demonstration project in Massachusetts.[10] Information about users of hazardous materials was analyzed to infer major transportation routes and shipment volumes. Project officials also wanted to perform highway counts or surveys of trucking firms, but such activities on a statewide scale were beyond the scope of the demonstration project.

These seven approaches can be combined in many ways. For example, one of the fastest ways to get information has been to use weigh station surveys coupled with highway counts in key areas that are not located near weigh stations. Similarly, some governments have used both periodic reporting and per trip reporting in order to provide a check on the accuracy of information.

This report focuses on the first three categories of information gathering: prenotification, per trip reporting, and periodic reporting. These are the most common approaches at the state and local level. It is important to remember, however, that there are other techniques that can be used to collect at least some of the same information.

1.2 PURPOSE AND SCOPE OF STUDY

The broad purpose of this study is to describe the extent, nature, and implementation of notification requirements at the federal, state, and local levels. This examination includes requirements pertaining to radioactive materials and other hazardous materials, including hazardous waste. Requirements addressed include both prenotification and reporting requirements.

The report begins by identifying and summarizing federal, state, and local notification requirements. These requirements are then analyzed along several dimensions: purpose and use of information, geographic

distribution, date of adoption, commodities covered, shipments covered, timing of notification, form of notification, information required, parties involved, degree of enforcement, implementation costs, and carrier and shipper impacts. The notification requirements of the U.S. Nuclear Regulatory Commission (NRC) and 14 states, localities, and facilities are subsequently examined in more detail. Finally, conclusions are drawn about the extent, purposes, uses, and impacts of state and local notification requirements.

1.3 RESEARCH METHODS

State and local notification requirements for shipments of radioactive and other hazardous materials vary considerably in structure and content. Some of the requirements are embodied in state statutes or local ordinances, others are administrative regulations, and a few are informal policies. Likewise, some of the requirements deal with hazardous materials generally while others focus only on radioactive materials or hazardous waste, and a variety of definitions are employed for all of these categories. Most requirements call for advance notification of shipments, but some mandate periodic or per trip reporting instead. These complexities necessitated a four-step approach to the identification of notification requirements.

The first step was to consult existing compilations of transportation laws. Some of these compilations focus only on notification while others include information on routing requirements, permits, and other issues. The following compilations were used:

American Trucking Associations, Department of Safety and Security. Transporting Hazardous Waste, October 1982.

Atomic Industrial Forum, Public Affairs and Information Program. State Nuclear Legislative Report: 1983 Sessions, 10 June 1983.

International Bridge, Tunnel, and Turnpike Association. Compendium of Regulations: Shipments of Radioactive Materials Over Toll Roads, Bridges, and Tunnels, February 1974.

National Conference of State Legislatures. State Statutes and Regulations on Radioactive Materials Transportation, October 1983.

Sandia National Laboratories, Transportation Technology Center. Transportation of Radioactive and Hazardous Materials: A Summary of State and Local Legislative Requirements, October 1983.

U.S., Department of Transportation, Office of Development. A Summary of Highway Facilities Where Hazardous Materials are Restricted, January 1977.

U.S., Nuclear Regulatory Commission. Compilation of State Laws and Regulations on Transportation of Radioactive Materials, January 1980.

U.S., Nuclear Regulatory Commission. Information Report on State Legislation, Vol. 9, No. 8, 15 December 1983.

In addition, a special computer search for notification regulations was prepared by the Legislative and Regulatory Information Office at the Oak Ridge National Laboratory. Information was also gathered from the Association of American Railroads, the Hazardous Waste Services Association, transportation newsletters, shippers and carriers involved in transporting radioactive and other hazardous materials, and several individuals who have compiled information about notification requirements.

It had been expected that information from these sources would be sufficient to identify and summarize notification requirements, but several problems were apparent after these sources had been consulted. For example, many of the requirements were without citations, meaning that accuracy and completeness could not be checked. In addition, several of the compilations cited laws by their legislative bill number, and a spot check revealed that some of these bills had never passed. The sources also used different definitions of notification, making it difficult to prepare a consistent list. These problems indicated the need for more in-depth research.

The second step of the research approach was to obtain copies of all pertinent statutes and regulations. The statutory codifications of all 50 states were searched, with particular attention paid to citations obtained from the compilations. Calls were made to appropriate agencies or state libraries to obtain copies of any relevant regulations in force. The list of statutes was also checked with these agencies to be sure it was complete. In addition, state officials in every state were asked if they

knew of any localities or facilities with notification laws. Calls were then made to localities that had been identified by these officials or in the compilations, and copies of applicable laws were obtained.

The third step was to analyze the requirements to identify missing information. The categories of data that were sought included: commodities covered, information required, form and timing of notice, notifying party, and agency receiving the notification. Tables were prepared to outline this information.

The fourth step was a series of individual calls to state and local agencies to collect any information still missing. These calls revealed several instances in which the agencies responsible for implementing a particular law were unaware of its existence. Other than instances of this type, these calls generally produced sufficient information to complete the inventory.

This four-step process has two important limitations. First, although the laws of every state were checked, a similar comprehensive analysis of local requirements would have been impractical. Thus, while it is likely that all state notification requirements are included, it is probable that some local ordinances have been overlooked. Only those local laws included in compilations, identified by state officials or industry personnel, or mentioned in press accounts were checked. Second, the analysis includes all laws in effect as of the summer of 1984. It is possible that the 1984 legislative sessions of some states have added new statutes, which would not be included in the tables.

Once the state and local laws were identified, they were analyzed to draw general conclusions about requirements. This included analyses of commodities covered, information required, and timing of notifications. In addition, follow-up phone calls were made to governments, shippers, and carriers to identify the use and impacts of these requirements. State and local agencies were asked to describe their use of the information obtained from the notifications, the degree of enforcement of the laws, and the costs resulting from the implementation of the laws. These agencies were also asked to describe the benefits they felt resulted from the notification laws. Carriers and shippers were asked about their

awareness of notification requirements and about the impacts such requirements had on their operations.

To provide further information about notification requirements, 14 case studies were prepared of specific state and local notification laws. These case studies provide more detailed and individualized information about the advantages and disadvantages of certain laws. The case studies were selected to illustrate a cross-section of notification requirements, and included several that were particularly interesting or unique. As such, the case studies cover the diversity of notification requirements but may not represent typical cases of such requirements. A separate in-depth case study of the NRC's notification requirements was also prepared.

2.0 INVENTORY OF REQUIREMENTS

This chapter summarizes notification requirements for shipments of radioactive and other hazardous materials at the federal, state, and local levels.

2.1 FEDERAL REQUIREMENTS

The two agencies with principal regulatory authority over the transportation of radioactive and other hazardous materials are the U.S. Department of Transportation (DOT) and the U.S. Nuclear Regulatory Commission (NRC). Under the Hazardous Materials Transportation Act,[11] DOT has the authority to regulate the classification, packaging, handling, labeling, placarding, and routing of all hazardous materials. For radioactive materials, which are a subset of hazardous materials, the DOT shares regulatory responsibility with the NRC. The NRC is the successor to the U.S. Atomic Energy Commission, and has the authority to impose physical security requirements for special nuclear materials in transit and packaging requirements for a variety of radioactive materials. This authority stems from the Atomic Energy Act of 1954,[12] the Energy Reorganization Act of 1974,[13] and related statutes.

In exercising their responsibilities under these Acts, the DOT and the NRC have both taken positions with respect to notification requirements. These positions are outlined in the following sections.

Department of Transportation

The basic authority for DOT regulation of hazardous materials stems from the Hazardous Materials Transportation Act (HMTA), which was approved in 1975. Under this Act, the DOT is granted broad powers to designate and regulate hazardous materials, and to impose penalties for violations of such regulations. In addition, state and local laws are preempted if they are inconsistent with the HMTA or regulations issued under the provisions of the HMTA. However, a procedure is included through which an application can be made to the Secretary of Transportation to allow an inconsistent law to stand if such a law "affords an equal or greater level

of protection to the public" as do federal regulations and if the law does not unreasonably burden commerce.[14]

The DOT has subsequently developed a variety of regulations to implement the provisions of the HMTA. Most of these regulations do not address the issue of notification for shipments of hazardous materials. However, the DOT did consider notification requirements during the development of its HM-164 Rulemaking on the Highway Routing of Radioactive Materials.[15] This rulemaking was the product of 2 1/2 years of study of highway routing of radioactive materials. During this process, the Department received hundreds of comments from state and local governments, shippers, carriers, individuals, and public interest groups. Several detailed risk assessments and studies were also prepared and referred to during the course of this rulemaking.

In its final rule, the DOT offered three basic principles that governed the approach taken:

"(1) Route selection should be based on some valid measure of reduced risk to the public,

(2) Uniform and consistent rules for route selection are needed from both a practical and safety standpoint, and

(3) Local views should be carefully considered in routing decisions since routing is a site-specific activity unlike other transport controls such as marking and packing."[16]

Based on these principles, the Department imposed two different requirements. First, all vehicles transporting radioactive materials for which placarding is required must operate on routes that minimize radiological risk. In choosing such routes, carriers are to consider accident rates, transit time, population density, and the times and days on which the shipment would be made. Second, vehicles containing "Large Quantity" radioactive materials (which since have been redesignated as "Highway Route Controlled Quantity" materials in order to ensure compatibility with international standards) are required to operate only on preferred routes. These preferred routes include the Interstate System unless other routes are specifically designated by state agencies. The use of beltways around cities is required if such routes are available.

The carrier is also required to provide the shipper with a written route plan, and the shipper in turn is required to file such information with the DOT within 90 days following the shipment.

In the preamble to the final rule, the DOT indicated that it had not yet decided whether to take action regarding prenotification. At the time of the rulemaking, the NRC was still considering its own rules requiring prenotification for shipments of nuclear waste and spent fuel. In order to avoid inconsistencies, the Department decided to wait for the NRC to issue its requirements before acting. Also, the DOT wanted to consider the results of a study of prenotification being conducted by the Puget Sound Council of Governments.

During the consideration of HM-164, many state and local governments filed comments with the Department suggesting the need for prenotification in order to facilitate enforcement of regulations and enhance emergency response. To partially address such concerns, the DOT agreed to share the information obtained through route plan filing with the states. However, in an appendix to the final rule, the Department stated that as a general policy it believes prenotification and reporting requirements are inconsistent with HM-164.[17] It has subsequently issued inconsistency rulings regarding some such state and local laws.

At this time, the DOT has no similar requirements for other hazardous materials. In its Notice of Proposed Rulemaking for HM-164, it noted that such requirements might be adopted subsequently, but that further study was required.[18]

Nuclear Regulatory Commission

In 1980, the NRC Authorization Act specifically directed the NRC to "promulgate regulations providing for timely notification to the Governor of any state prior to the transport of nuclear waste, including spent nuclear fuel, to, through, or across the boundaries of such State."[19] NRC has issued these requirements as 10 CFR Section 71.97 for nuclear waste and 10 CFR Section 73.37(f) for spent fuel.

The regulation pertaining to nuclear waste applies only to nuclear waste required to be in Type B packaging, transported to a disposal site, shipped in packages containing more than a certain quantity, and not subject to the prenotification requirement for spent fuel. Information about the parties involved in the shipment, the schedule of the shipment, and the material involved is required. The regulation requires a licensee to provide notification in writing to the governor or the governor's designee and to the appropriate NRC Regional Office. A notification delivered by mail must be postmarked at least seven days before the beginning of the seven-day period during which departure of the shipment is estimated to occur. Notification by messenger must arrive at least four days before the beginning of this period.

The spent fuel requirement is similar. It differs primarily in that the contents of the notification are specified in greater detail. It must include a description of the shipment and a listing of the routes to be used. A separate enclosure must provide the estimated date and time of departure from the shipment's point of origin and the estimated date and time of entry into the governor's state. This schedule information must be considerably more precise than that required for nuclear waste. State officials and others receiving such schedule information must protect the information against unauthorized disclosure. Licensees are also required to notify the governor or designee by telephone of any schedule change of more than six hours from that given in the written notice.

Taken together, NRC's prenotification requirements apply to many, but not all, shipments of radioactive materials in Highway Route Controlled Quantities. In particular these requirements do not apply to nuclear waste or spent fuel shipments by nonlicensees, primarily those of the U.S. Department of Energy. Nor do they apply to shipment of large quantities of radioactive materials other than waste or spent fuel, such as large source teletherapy materials.

The NRC prenotification requirements and their effects are described in more detail in Chapter 4.

2.2 STATE AND LOCAL REQUIREMENTS

State and local governments, as well as government owned and operated facilities such as bridges, tunnels, airports, and turnpikes, have developed and implemented a diverse group of notification requirements for the transport of particular materials. These requirements fall into two broad classes, prenotification and reporting. Prenotification laws require notification in advance of each shipment. Reporting laws require notification subsequent to shipment. Reporting requirements can be further subdivided into per trip reporting and periodic reporting. The first category requires some sort of report to be filed following each trip, while the second category requires a summary report to be filed on a specified basis, such as monthly or annually.

In summarizing state, local, and facility notification requirements, this report uses broad definitions of both prenotification and reporting. Any law that could under certain circumstances require a shipper or carrier to provide information about a shipment in advance has been classified as a prenotification requirement, even if the time interval is very short or if the law would apply only in unusual cases. Similarly, any law that requires information to be provided subsequent to shipment has been included as a reporting requirement. However, permit requirements that do not require information about specific shipments have been excluded. For example, a state may require a carrier to obtain a special license in order to transport radioactive materials. If this license requirement does not include notification or reporting provisions, it would not be included even though it must be obtained before a shipment can be made. Likewise, the usual licensing and permitting requirements imposed on all carriers have been excluded.

Table 2.1 lists all of the state and local notification requirements identified by this study. This table does not include laws that are simply repetitions of federal regulations when such laws have no independent effect. The table does include a few laws that overlap federal regulations but also extend those regulations to a wider set of commodities. Laws that have been invalidated by courts or ruled inconsistent by the DOT are included in the table to allow the total

extent of notification laws to be assessed. The table also includes a few informal requirements that do not have the force of law, but which are given here to ensure completeness.

Table 2.1 includes ten columns of information. The first column lists jurisdictions alphabetically by state. Within a given state, state requirements are described first, followed by local and facility requirements in alphabetical order. The second column provides a citation to the appropriate statutory compilation, set of regulations, or local code. The third column gives the date when the notification requirement was first approved. In a few cases such information was not available from the sources consulted, and could not be identified by state or local officials.

The fourth column in Table 2.1 outlines the commodities identified by the notification law. The descriptions given are direct quotes or close paraphrases of the ones used in the laws themselves. In a few cases, the list of commodities covered is so lengthy that the reader is referred to the text of the appropriate law. Some of the descriptions seem unusual because of bans on transportation of certain commodities through that jurisdiction. In such cases, the jurisdiction permits certain shipments if notification is made but prohibits other shipments altogether, which results in a few odd-sounding definitions of commodities covered by notification requirements. These situations are marked with an asterisk in the fourth column of Table 2.1. The terms "for export" and "for import" in this column for some entries refers to export from or import into the U.S. rather than export from or import into a particular state.

Some laws fail to offer or refer to a definition of the commodities that are covered. For example, a law may impose a notification requirement for "radioactive waste" without explaining what specific materials are covered by the definition. The terminology used in Table 2.1 should not be assumed to correspond to federal definitions unless so indicated. In many cases, state and local governments have defined commodities differently than the federal government. In other cases, state and local governments have adopted the federal definitions that were in effect at the time of passage. These definitions are in some

cases outdated. Many of the state and local laws use the term "Large Quantity," which has now been replaced in federal regulations by the term "Highway Route Controlled Quantity." Some of the current federal definitions are summarized in Appendix A.

The fifth column in Table 2.1 provides information about the type of shipments that are covered. Four different types were considered: shipments into a jurisdiction, out of a jurisdiction, within a jurisdiction, and through a jurisdiction. Some requirements cover all four categories of shipments, in which case "All" is shown in the table. Many laws are silent on this issue, but imply by their wording that all shipments are covered. In these instances, "All[1]" is shown in the table.

Information about the type of shipments is most relevant for state laws, since shipments into, out of, within, or through a state can be readily envisioned. All four cases are also possible for localities, although shipments of radioactive or other hazardous materials within a locality are unusual. For facilities, these terms have little or no meaning, since a shipment either does or does not use a facility. All facilities in Table 2.1 have the "All[1]" designation.

The sixth column of the table describes the timing of notification required by the law. Advance notification requirements include the word "prenotification" in their descriptions. Reporting requirements are explained using words such as "reporting", "after arrival", or "upon delivery."

The seventh column explains whether written or oral notification is required. Some laws permit either form, while others are silent on this subject. Most of the laws without explicit requirements seem to imply that either form would be acceptable.

The eighth column describes the types of information required when notification is made. Among the most common entries are amount and type of material, origin, destination, route, shipper, carrier, receiver, and schedule. Also, many of the reporting laws require copies of manifests to be filed.

The ninth and tenth columns list who provides the notification and who receives it. In a few cases, the notification can be provided by one of several parties; in these cases all of the possibilities are listed.

Table 2.1 includes a total of 136 separate notification requirements. Of these, 62 have been issued by state governments, 42 by local governments, and 32 by facilities. These totals include several laws that have more than one notification requirement, plus several more laws issued by a central authority that apply to more than one facility. When these effects are removed, there are 91 different notification laws. This total is comprised of 31 state laws, 40 local laws, and 20 laws that apply to facilities. A few governments have more than one set of notification laws. By removing this effect, a total of 80 governmental units with notification laws can be identified. Of these, 24 are states, 38 are localities, and 18 are facilities.

During the course of the study, many references to other notification requirements were identified. When these were checked it was discovered that they had been rescinded or had never existed. These unconfirmed notification requirements are listed in Appendix B.

Table 2.1. Summary of Notification Requirements

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
ALABAMA									
Chickasaw	Local Ord. No. 1040.	1984	Hazardous wastes as defined by 40 CFR 261.3, 40 CFR Subpart D, and appendices to 40 CFR 261; and any waste material with more than 0.1% PCBs. Radioactive wastes are excluded.	All[1]	Prenotification prior to 8:00 A.M. on day of arrival.	Phone	Route and schedule.	Carrier	Police Dept.
ARIZONA									
Phoenix	Fire Prevention Code Sec. 20.4(b).	1982	Hazardous materials, chemicals, wastes, or substances.	Into, out of, through	Prenotification. Timing not specified.	Not listed	Amount and type of material, and route.	Carrier	Division of Fire Prevention
Tempe	Informal request.	Not given	Explosives.	Through	Prenotification. Timing not specified.	Phone	Amount and type of material, route, and schedule.	Carrier	Police Dept.
Tucson	City Code Sec. 13-7(c).	1981	Radioactive materials.(*)	Into, through	2 days prenotification	Not listed	Amount, type, and activity of material; origin; destination; route; shipper; carrier; receiver; and schedule.	Carrier or shipper	Fire Dept.
ARKANSAS									
State	Ark. Hazardous Waste Management Code Sec. 16(c). Implements Ark. Stat. Ann. Sec. 82-4222(d).	1984	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761.	Into, out of	1 day prenotification. Applies only to single shipments and the first shipment in a shipment series.[2]	Written	Amount and type of material, origin, destination, carrier, and schedule.	Carrier, shipper, or receiver	Dept. of Pollution Control and Ecology

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
ARKANSAS (cont.)									
State	Ark. Hazardous Waste Management Code Sec. 16(o).	1983	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761.	All	2 days after start of trip.	Written	Copy of manifest.	Shipper	Dept. of Pollution Control and Ecology
State	Ark. Hazardous Waste Management Code Sec. 16(p).	1984	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761.	All	45 days after start of trip.	Written	Copy of signed and completed manifest.	Shipper	Dept. of Pollution Control and Ecology
State	Ark. Hazardous Waste Management Code Sec. 16(s)(E).	1984	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761. Applies to shipments by water only.	All	2 days after delivery to water transporter.	Written	Copy of manifest.	Carrier or shipper delivering load to water transporter.	Dept. of Pollution Control and Ecology
State	Ark. Hazardous Waste Management Code Sec. 16(u)(3).	1983	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761. Applies only to shipments delivered outside of the U.S.	Out of	After completion of trip.	Written	Copy of signed manifest. Applies only to shipments delivered outside of the U.S.	Carrier	Dept. of Pollution Control and Ecology
State	Ark. Hazardous Waste Management Code Sec. 16(w).	1984	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761. Applies only when shipment cannot be delivered to intended receiver.	All	Reporting. Timing not specified.	Written	Copy of revised manifest.	Shipper	Dept. of Pollution Control and Ecology
State	Ark. Hazardous Waste Management Code Sec. 16(bb)(4).	1983	Hazardous wastes as defined in 40 CFR 261.3 and PCBs as defined in 40 CFR 761.	Into, within	Monthly reporting by 10th day of following month.	Written	Copies of all manifests received, regardless of state of origin.	Receiver	Dept. of Pollution Control and Ecology
CALIFORNIA									
State	Cal. Veh. Code Sec. 33002.	1980	Spent fuel.	Into, within	3 days prenotification.	Written	Origin, destination, shipper, carrier, receiver, and 48 hour periods of expected departure and arrival.	Carrier	California Highway Patrol

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
CALIFORNIA (cont.)									
Golden Gate Bridge	Bridge Regs. Sec. 8(b).	Not given	Radioactive materials.	All[1]	30 minutes prenotification.	Phone	Amount and type of material.	Carrier	Bridge District
Morro Bay	Local Code Chap. 8.28.	1979	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 exceeds 1 kilogram, elements with atomic numbers of 89 or above with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, and any Large Quantity radioactive materials.	All[1]	2 weeks prenotification.	Not listed	Amount and type of material, shipper, carrier, and schedule.	Carrier	Director of Health
COLORADO									
State[3]	Colo. Rev. Stat. Sec. 25-15-301(2)(b).	1981	Hazardous waste.	All[1]	Periodic reporting. Timing not specified.	Not listed	Not specified by act. Dept. of Health has not promulgated implementing regulations.	Carrier, shipper, or receiver	Dept. of Health
CONNECTICUT									
State	Conn. Agencies Regs. Sec. 19-409d-54. Implements Conn. Gen. Stat. Ann. Sec. 16a-106(b).	1977	Large Quantity radioactive materials and any waste produced as part of the nuclear fuel cycle.	Out of, through	2-24 hours prenotification on normal business days.	Written	Amount, type, and activity of material; origin; destination; route; shipper; carrier; schedule; vehicle; and driver.	Carrier	Commissioner of Transportation
New London[4]	City Code Secs. 11-101 to 11-105.	1978	Large Quantity radioactive materials and spent nuclear fuel.	All[1]	30 days prenotification.	Written	Amount and type of material, origin, destination, route, shipper, carrier, and schedule.	Carrier	Director of Health
DELAWARE									
Delaware Memorial Bridge	Bridge Reg.	Not given	Hazardous materials.	All[1]	Prenotification upon arrival at bridge.	Phone	Type of material.	Carrier	Bridge Police

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
GEORGIA (cont.)									
State	Ga. Admin. Comp. Ch. 672-10, Sec. 02(2).	1979	Radioactive materials, except: those transported on an exclusive use vehicle, spent fuel, those having a Transportation Index in excess of 50, and Large Quantity materials.	All[1]	Annual reporting in advance.	Written	Carrier, estimated number of trips, and amount and type of material to be transported per trip.	Carrier	Dept. of Transportation
State	Ga. Admin. Comp. Ch. 672-10, Sec. 05(b).	1979	Radioactive materials, except: those transported on an exclusive use vehicle, spent fuel, those having a Transportation Index in excess of 50, and Large Quantity materials.	All[1]	Annual reporting within 30 days of expiration of annual permit.	Written	Actual number of trips made, and amount and type of material transported on each trip.	Carrier	Dept. of Transportation
State[5]	Ga. Code Ann. Sec. 43-2908.	1979	Hazardous waste.	All	Not specified.	Written	Copy of manifest.	Carrier	Board of Natural Resources
Garden City	Local Code Sec. 10-4018.	1979	Radioactive materials, except: limited quantities as defined in 49 CFR 173.391, radiation sources used in nondestructive testing, teletherapy sources, medical devices, and materials being shipped for national defense purposes.(*)	All[1]	78 hours prenotification.	Not listed	Amount, type, and activity of material; origin; destination; route; shipper, carrier; receiver; and schedule.	Carrier or shipper	Chief of Police
ILLINOIS									
State	Ill. Rev. Stat. Ch. 111 1/2, Sec. 1021(g)(1). Public Act 81-856, Sec. 1.	1981	Hazardous wastes.	All[1]	Annual reporting.[6]	Written	Amount and type of material.	Carrier	Illinois Environmental Protection Agency

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
FLORIDA									
State	Fla. Admin. Code Sec. 10D-63.14(1).	1982	Radioactive waste in Type B packaging, and various other types and quantities of radioactive materials as specified in Fla. Admin. Code Sec. 10D-63.14(1).	All	4 days prenotification by messenger, 7 days by mail.	Written	Amount and type of material, origin, destination, shipper, carrier, receiver and 7 day periods for departure from origin, arrival in Florida, and arrival at destination.	Shipper	Dept. of Health and Rehabilitative Services
State	Fla. Admin. Code Sec. 10D-63.141(2)(a). Implements Fla. Stat. Ann. Sec. 404.20(6).	1982	Low-level radioactive waste.	Into, through	2-30 days prenotification.	Written or phone	Amount, type, and activity of material; route; carrier; and schedule.	Carrier	Dept. of Health and Rehabilitative - Services
State	Fla. Admin. Code Sec. 10D-63.142(1). Implements Fla. Stat. Ann. Sec. 404.20(3)(a).	1982	Radioactive waste destined for a low-level waste treatment, storage, or disposal facility.	All	2 days prenotification.	Written or phone	Origin, destination, route, shipper, carrier, receiver, and schedule.	Shipper	Dept. of Health and Rehabilitative Services
State	Fla. Admin. Code Sec. 10D-63.142(5). Implements Fla. Stat. Ann. Sec. 404.20(5).	1982	Radioactive waste destined for a low-level waste treatment, storage, or disposal facility.	All	3 days after arrival at destination.	Not listed	Arrival of shipment at destination.	Shipper	Dept. of Health and Rehabilitative Services
State	Fla. Admin. Code Sec. 10D-63.142(5). Implements Fla. Stat. Ann. Sec. 404.20(5).	1982	Radioactive waste destined for a low-level waste treatment, storage, or disposal facility.	All	2 weeks after arrival at destination.	Written	Records of receipt and any information concerning violations of regulations.	Shipper	Dept. of Health and Rehabilitative Services
GEORGIA									
State	Ga. Admin. Comp. Ch. 672-10, Sec. 05(a).	1979	LNG, PCBs, radioactive materials being transported on an exclusive use vehicle, spent fuel, radioactive materials having a Transportation Index in excess of 50, and Large Quantity materials.	All[1]	Upon beginning any movement within or into the state. Another call is made upon completing travel in the state.	Phone	Amount and type of material, origin, destination, route, carrier, and permit number.	Carrier	Dept. of Transportation

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
KANSAS									
Lawrence	Ord. No. 5344.	1982	Radioactive materials, except: limited quantities as defined in 49 CFR 173.391, radiation sources used in nondestructive testing, teletherapy materials, medical devices, and materials being shipped for national defense purposes.(*)	All[1]	Monthly reporting.	Not listed	Amount, type, and activity of each shipment; date, time, and route of each shipment; shipper and receiver of each shipment; and carrier.	Carrier	Fire Chief
KENTUCKY									
Covington[7]	Commissioners' Ord. No. 0-31-80.	1980	Materials that are toxic, corrosive, irritating, strong sensitizers, flammable (with flash points below 80°F), radioactive, capable of generating pressure, or capable of causing substantial personal injury or illness.	All[1]	Prenotification. Timing not specified.	Phone	Type of material and shipper.	Carrier	Fire Dept.
LOUISIANA									
State	La. Hazardous Waste Regulations Sec. 6.7(d).	1983	Hazardous wastes as defined in La. Hazardous Waste Regulations Chap. 24.	All[1]	7 days after receiving completed manifest from receiver.	Written	Copy of manifest.	Shipper	Dept. of Natural Resources
State	La. Hazardous Waste Regulations Sec. 6.7(f).	1983	Hazardous wastes as defined in La. Hazardous Waste Regulations Chap. 24.	All[1]	Annual reporting by March 1.	Written	Amount and type of material, manifest numbers, and disposition.	Carrier, shipper, or receiver	Dept. of Natural Resources
Kenner	Local Ord. Nos. 3840, 3841.	1984	Explosives.	All[1]	Prenotification upon approaching city.	Phone	Type of material, destination, route, and amount of time in the city.	Carrier	Fire and Police Departments

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
MAINE									
State	Me. Rev. Stat. Ann. Tit. 25, Sec. 210.9.	1983	Low-level radioactive waste.	All[1]	1 day prenotification.	Not listed	Amount and type of material, destination, and route.	Carrier	Chief of State Police
State	Dept. of Environmental Protection Regs. Chap. 857, Sec. 6(A)(3).	1980	Hazardous waste as defined in Dept. of Environmental Protection Regs. Chap. 850.	Within, out of	Within 2 days of departure.	Written	Copy of manifest.	Shipper	Dept. of Environmental Protection
State	Dept. of Environmental Protection Regs. Chap. 857, Sec. 6(D).	1980	Hazardous waste as defined in Dept. of Environmental Protection Regs. Chap. 850, and intended for export.	Out of	2 weeks prenotification.	Written	Amount and type of material, receiver, and evidence that receiver is authorized to handle the waste.	Shipper	Dept. of Environmental Protection
State	Dept. of Environmental Protection Regs. Chap. 857, Sec. 7(A)(4)(c).	1980	Hazardous waste as defined in Dept. of Environmental Protection Regs. Chap. 850, and transferred from one carrier to another.	All[1]	Within 2 days of transfer.	Written	Copy of manifest.	Original carrier	Dept. of Environmental Protection
State	Dept. of Environmental Protection Regs. Chap. 857, Sec. 7(C).	1980	Hazardous waste as defined in Dept. of Environmental Protection Regs. Chap. 850, and that is exported.	Out of	Within 2 days of departure from U.S.	Written	Copy of manifest.	Carrier	Dept. of Environmental Protection
State	Dept. of Environmental Protection Regs. Chap. 857, Sec. 8(A)(3)(c).	1980	Hazardous waste as defined in Dept. of Environmental Protection Regs. Chap. 850.	Into, within	Within 2 days of arrival.	Written	Copy of manifest.	Receiver	Dept. of Environmental Protection
MARYLAND									
Francis Scott Key Bridge	SEE MARYLAND TRANSPORTATION AUTHORITY								
Harry W. Nice Memorial Bridge	SEE MARYLAND TRANSPORTATION AUTHORITY								

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
MARYLAND (cont.)									
John F. Kennedy Memorial Highway	SEE MARYLAND TRANSPORTATION AUTHORITY								
Kent County	Emer. Bill No. 1-81.	1981	Spent fuel, wastes from reprocessing, or solvents into which such wastes have been converted.	All[1]	1 day prenotification.	Not listed	Not specified in law.	Carrier	Sheriff
Maryland Transportation Authority (applies to five facilities)	Md. Trans. Auth. Reg. Sec. 11.07.01.19.	1957	Class A or B explosives (other than special fireworks), and all radioactive materials except the following: radionuclides used for medical, industrial, agricultural, or research purposes; natural uranium metal; depleted uranium; magnesium-thorium alloys in formed shapes; sealed radium or radon items used for medical purposes; and non-liquid manufactured articles containing radioactive materials as component parts.	All[1]	1 hour prenotification.	Phone	Amount and type of material, and schedule.	Carrier	Bridge or Highway Superintendent
Prince George's County	County Code No. 8 Sec. 18-187.	1980	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 exceeds 1 kilogram, elements with atomic number of 89 or above with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any radioactive material requiring an escort.	All	3 working days prenotification.	Not listed	Amount and type of material, origin, destination, route, stopping points, shipper, carrier, receiver, and schedule.	Carrier	County Executive

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
MARYLAND (cont.)									
Susquehanna River Bridge	SEE MARYLAND TRANSPORTATION AUTHORITY								
William Preston Lane, Jr. Memorial Bridge	SEE MARYLAND TRANSPORTATION AUTHORITY								
MASSACHUSETTS									
State	Mass. Admin. Code Tit. 310, Sec. 30.313(2).	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130.	All[1]	10 days after departure.	Written	Copy of manifest.	Shipper	Dept. of Environmental Quality Engineering
State	Mass. Admin. Code Tit. 310, Sec. 30.313(6).	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130.	All[1]	Upon delivery.	Written	Copy of manifest.	Receiver	Dept. of Environmental Quality Engineering
State	Mass. Admin. Code Tit. 310, Sec. 30.313(7).	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130.	All[1]	Upon delivery.	Written	Copy of manifest.	Receiver	Appropriate agency in state of generation, if not Mass.
State	Mass. Admin. Code Tit. 310, Sec. 30.332(1).	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130.	All[1]	Annual reporting by March 1.	Written	Description of all waste transported from site, and listings of all transporters used.	Shipper	Dept. of Environmental Quality Engineering
State	Mass. Admin. Code Tit. 310, Sec. 30.361(2)(a).	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130. Covers shipments for export only.	Out of	Prenotification 4 weeks before first shipment to any country in any year.	Written	Amount and type of material, destination, and receiver.	Shipper	Dept. of Environmental Quality Engineering
State	Mass. Admin. Code Tit. 310, Sec. 30.407.	1983	Ignitable, corrosive, reactive, and toxic wastes as specified in Mass. Admin. Code Tit. 310, Sec. 30.130.	All[1]	Monthly reporting	Written	Amount and type of materials, origins, destinations, shippers, and receivers.	Carrier	Dept. of Environmental Quality Engineering

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
MASSACHUSETTS (cont.)									
State	Informal agreement.	Not given	Spent fuel and other radioactive wastes shipped from reactor sites.	All[1]	Prenotification. Timing not specified.	Phone	Origin, route, and schedule.	Shipper	Dept. of Public Health
Massachusetts Turnpike Authority	Mass. Admin. Code Tit. 730, Sec. 5.04 (4)(a)(8).	1955	Any radioactive materials.	All[1]	Varies.[8]	Written	Amount and type of material, carrier.	Carrier	Turnpike Authority
Newton	Newton Code Sec. 19-6(a).	1979	Hazardous materials that require notification to state Dept. of Public Health.[9]	All[1]	1 day prenotification.	Not listed	Amount, type, and activity of material; route; schedule; and packaging.	Carrier	Fire Chief and Police Chief
MICHIGAN									
State[10]	Mich. Admin. Code R. 29.553. Also, Mich. Code R. 325.5803.	1982	Spent fuel and Large Quantity materials.	All[1]	15 days prenotification.	Written	Amount and type of material, origin, destination, route, bridges to be traversed, alternate routes, rationale for choice of route, shipper, carrier, receiver, schedule, certification of vehicle inspection, copy of NRC approval, and emergency plan.	Carrier	Dept. of State Police
Blue Water Bridge	Bridge Regs.	Not given	Class A and B explosives (other than special fireworks) and a series of "dangerous" articles listed in bridge regulations.(*)	All[1]	2 days prenotification.	Not listed	Amount and type of material, carrier, schedule.	Carrier	Bridge Authority
Mackinac Bridge	Bridge Regs.	1957	Flammable liquids, gases, explosives, and materials requiring special handling.	All[1]	2 hours prenotification.	Phone	Schedule.	Carrier	Bridge Authority

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
MICHIGAN (cont.)									
Ypsilanti	Ord. No. 525.	1979	Radioactive materials, except: limited quantities as defined in 49 CFR 173.391, radiation sources used in nondestructive testing, teletherapy materials, medical devices, and materials being shipped for national defense purposes.(*)	All[1]	2 days prenotification.	Not listed	Amount, type, and activity of material; route, shipper, carrier, receiver; schedule; and packaging.	Carrier, shipper, or receiver	Chief of Police
MISSISSIPPI									
State	Miss. Regs. for Radioactive Waste Transportation Sec. 6. Implements Miss. Code Ann. Sec. 45-14-63.	1982	Radioactive waste, including spent fuel, high-level waste, transuranic waste, and low-level waste.	All[1]	7 days if mailed; 4 days if by messenger.	Written	Amount and type of material, route, and schedule.	Shipper	Emergency Management Agency
State	Miss. Regs. for Radioactive Waste Transportation Sec. 6(1). Implements Miss. Code Ann. Sec. 45-14-63.	1982	Radioactive waste, including spent fuel, high-level waste, transuranic waste, and low-level waste.	All[1]	After each shipment.	Written	Copies of inspection form and manifest signed by consignee.	Shipper	Emergency Management Agency
MONTANA									
Missoula[11]	Ord. No. 2181.	1980	Type B radioactive materials.	All	1 day prenotification.	Not listed	Amount, type, and activity of material; origin; destination; route; shipper; carrier; receiver; schedule; and identification of vehicle.	Carrier, shipper, or receiver	Police Chief
Missoula[11]	Ord. No. 2181.	1980	Large Quantity radioactive materials.	All	Prenotification in order to obtain permit. Timing not specified.	Not listed	Amount, type, and activity of material; origin; destination; route; shipper; carrier; receiver; schedule; and past safety records of shipper and carrier.	Carrier, shipper, or receiver	City Council

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEVADA									
State	Nev. Rev. Stat. Sec. 706.441(4).	1981	Radioactive waste.	All[1]	4-48 hours prenotification.	Not listed	Amount and type of material, origin, destination, and schedule.	Carrier	Highway Patrol
NEW HAMPSHIRE									
State	N.H. Admin. Code Sec. He-P 1905.04(b)(1).	1982	Hazardous wastes as defined in N.H Admin. Code Sec. He-P 1905.03.	Within, out of	Within 5 days of shipment.	Written	Copy of manifest.	Shipper	Div. of Public Health
State	N.H. Admin. Code Sec. He-P 1905.04(b)(3)(b).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03.	Within, out of, in to	Within 5 days of arrival.	Written	Copy of manifest.	Receiver	Div. of Public Health
State	N.H. Admin. Code Sec. He-P 1905.04(b)(3)(b).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03.	Into, out of,	Within 5 days of arrival.	Written	Copy of manifest.	Receiver	Appropriate agency in origin or destination state other than N.H.
State	N.H. Admin. Code Sec. He-P 1905.04(d)(3)(a).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03. Applies to shipments imported from a foreign country only.	Into	30 days prenotification.	Not listed	Amount and type of material, carrier, receiver, and route.	Receiver	Div. of Public Health
State	N.H. Admin. Code Sec. He-P 1905.04(d)(3)(a).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03. Applies to shipments for export only.	Out of	30 days prenotification.	Not listed	Amount and type of material, shipper, carrier, and route.	Shipper	Div. of Public Health
State	N.H. Admin. Code Sec. He-P 1905.04(d)(3)(c).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03. Applies to shipments for export only.	Out of	Prenotification. Timing not specified.	Not listed	Amount and type of material, shipper, carrier, and route.	Shipper	Port of Entry at exit from N.H.
State	N.H. Admin. Code Sec. He-P 1905.07(e)(3).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03. Applies to shipments for export only.	Out of	Not specified.	Written	Copy of manifest.	Carrier	Appropriate agency in origin state. If N.H., Div. of Public Health.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW HAMPSHIRE (cont.)									
State	N.H. Admin. Code Sec. He-P 1905.06(h)(2).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03.	All[1]	Annual reporting within 60 days of end of state's fiscal year.	Written	Summary of amounts and types of waste shipped off-site.	Shipper	Div. of Public Health
State	N.H. Admin. Code Sec. He-P 1905.11(e).	1982	Hazardous wastes as defined in N.H. Admin. Code Sec. He-P 1905.03.	All[1]	Annual reporting within 60 days of end of state's fiscal year.	Written	Summary of amounts and types of waste carried.	Carrier	Div. of Public Health
NEW JERSEY									
State	N.J. Rev. Stat. Sec. 26:2D-19.	1977	Radioactive materials exceeding certain levels of radioactivity specified in statute.	All[1]	7 business days pre-notification.	Not listed	Amount and type of material, origin, destination, route, shipper, carrier, and schedule.	Carrier	Dept. of Environmental Protection
Garden State Parkway[12]	N.J. Admin. Code Tit. 19, Sec. 8-1.12.	Not given	Radioactive materials.	All[1]	1 week Prenotification.	Written	Amount and type of material, and route.	Carrier	N.J. Highway Authority
Newark International Airport	SEE FIRST ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY (LISTED UNDER NEW YORK)								
New Jersey Turnpike	N.J. Admin. Code Tit. 19, Sec. 9-1.15.	Not given	Radioactive materials and Class A, B, or C explosives.	All[1]	Prenotification. Timing not specified.	Written	Amount and type of material, route, and frequency of shipments.	Carrier	N.J. Turnpike Authority
NEW MEXICO									
State	Informal request.	1980	Radioactive materials.	All	1 day prenotification.	Phone or written	Amount, type, and activity of material; origin; destination; route; and schedule.	Carrier	Environmental Improvement Division
NEW YORK									
Bayonne Bridge	SEE SECOND ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
Binghamton	Ord. No. 81-28.	1981	Spent fuel. Rail shipments excluded.	All[1]	2 days prenotification.	Not listed	Amount and type of material, route, shipper, carrier, schedule, and list of stops in Binghamton.	Carrier	Chief of Police

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW YORK (cont.)									
Geneva	Municipal Code Sec. 60.67.	1980	Spent fuel, Large Quantity radioactive materials, and radioactive materials exceeding 2 grams or 20 curies.	All	2 weeks prenotification.	Written	Amount, type, and activity of material; origin; destination; route; schedule; individual or firm responsibile for emergency response; and proof of insurance.	Carrier or shipper	Police Department
George Washington Bridge Expressway	SEE THIRD ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
George Washington Bridge Lower Level	SEE THIRD ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
George Washington Bridge Upper Level	SEE SECOND ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
Goethals Bridge	SEE SECOND ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
Holland Tunnel	SEE THIRD ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
Ithaca	Municipal Code Sec. 65.61.	1980	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 exceeds 1 kilogram, elements with atomic numbers of 89 to 103 with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, and Large Quantity radioactive materials. Notification applies only to shipments for medical or educational research purposes; shipments for any other purpose are banned.	Into, through	2 weeks prenotification.	Not listed	Amount and type of material, destination, route, and schedule.	Carrier or shipper	Mayor and Chief of Police

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW YORK (cont.)									
Jefferson County[13]	Res. No. 81.	1982	Radioactive waste.	All[1]	1 day prenotification.	Not listed	Amount and type of material, route, and schedule.	Carrier or shipper	Not specified
Kennedy International Airport	SEE FIRST ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
La Guardia Airport	SEE FIRST ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
Lincoln Tunnel	SEE THIRD ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								
New York City	City Health Code Sec. 175.111(a).	1977	Large Quantity, Fissile Class III, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount, type, and activity of material; origin; destination; route; shipper; carrier; receiver; and schedule.	Carrier or shipper	Health Department
New York City	Regs. for Transportation of Hazardous Cargo Sec. VI.B.	1982	Class A and B explosives, Class C explosives in quantities exceeding 50 pounds (except small arms ammunition), and fireworks other than those transported for a display for which a Fire Dept. permit has been issued.	All	2 days prenotification.	Phone	Amount and type of material, route, shipper, carrier, and schedule.	Carrier	Fire Department
New York Thruway[14]	N.Y. State Thruway Authority Rules.	Not given	Radioactive materials.	All[1]	Varies.[15]	Written	Amount and type of material.	Carrier or shipper	Thruway Authority
Ogdensburg Bridge[16]	N.Y. Admin. Code Tit. 21, Sec. 5701.3.	1980	Radioactive materials, explosives, propane gas, and other dangerous commodities or residues thereof.	All[1]	2 days prenotification.	Not listed	Amount and type of material.	Carrier	Bridge Authority
Outerbridge Crossing	SEE SECOND ENTRY FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY								

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW YORK (cont.)									
Port Authority of New York and New Jersey (applies to three facilities)	Port Authority Airport Rules and Regs. Secs. 240/0-04, 240/0-05.	1977	Radioactive source material (excluding "unimportant quantities of source material"), special nuclear material, new reactor fuel elements, spent reactor fuel elements, radioactive waste materials, other radioactive materials, moving under NRC permit, explosives, and dangerous articles barred from transportation by civil aircraft.	All[1]	1 day prenotification.	Not listed	Amount and type of material.	Carrier	Airport Manager
Port Authority of New York and New Jersey (applies to four facilities)	Port Authority Haz. Matl. Regs. Part I, Secs. 1, 2(a).	Not given	Class A or B explosives (other than special fireworks), and all radioactive materials except the following: radionuclides used for medical, industrial, agricultural, or research purposes; natural uranium metal; depleted uranium; magnesium-thorium alloys in formed shapes; sealed radium or radon items used for medical purposes; and non-liquid manufactured articles containing radioactive materials as component parts.	All[1]	2 hours prenotification.	Phone	Amount and type of material, and schedule.	Carrier	Bridge Manager
Port Authority of New York and New Jersey (applies to four facilities)	Port Authority Haz. Mtl. Regs. Part II, Sec. 9A.1(c)(4).	Not given	Non-liquid manufactured articles containing radioactive materials as component parts.(*)	All[1]	Prenotification. Timing not specified.	Not listed	Amount and type of material.	Carrier	Bridge or Tunnel Manager
Rockland County	Resolution No. 364 of 1984.[17]	1984	Radioactive waste.	All[1]	Prenotification. Timing not specified.	Not listed	Schedule.	Governor of N.Y.	County officials

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW YORK (cont.)									
St. Lawrence County[18]	Local Law No. 10 for 1980.	1980	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (20% U-235) where the U-235 exceeds 1 kilogram, elements with atomic numbers of 89 or above with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, and any large Quantity radioactive materials (except Co-60) used for medical therapy or research.	All[1]	5 days prenotification.	Written	Amount and type of material, route, schedule, and emergency plan.	Carrier	County Emergency Services Coordinator
Syracuse	Informal request.	1980	Radioactive materials shipped from reactor sites.	Out of, within	Prenotification when leaving reactor on the way to Syracuse.	Phone	Amount and type of material, route, carrier, schedule, tractor number, and trailer number.	Shipper	Fire Dept.
Thousand Islands Bridge[19]	N.Y. Admin. Code Tit. 21, Sec. 5503.3.	1979	Radioactive materials, explosives, propane gas, and other dangerous commodities or residues thereof.	All[1]	Prenotification. Timing not specified.	Written or phone	Amount and type of material.	Carrier	Thousand Islands Bridge
Throgs Neck Bridge	Triborough Bridge and Tunnel Authority Regs. Sec. 254.6(a).	Not given	Class A or B explosives (other than special fireworks), in quantities exceeding 10 pounds.(*)	All[1]	2 hour prenotification	Not listed	Amount and type of material, carrier, and schedule.	Carrier	Facility Supervisor
Tompkins County	Res. No. 132.	1980	Fissile Class III materials and packages labeled "Yellow III."	Into, out of, through	Prenotification. Timing not specified.	Not listed	Amount and type of material, route, verification of inspections, and certificate of liability insurance.	Carrier	County Fire and Disaster Coordinator

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
NEW YORK (cont.)									
Verrazano-Narrows Bridge Upper Level	Triborough Bridge and Tunnel Authority Regs. Sec. 254.3(b)(3).	Not given	Radioactive pharmaceuticals.(*)	All[1]	2 hour prenotification	Not listed	Amount and type of material, carrier, and schedule.	Carrier	Facility Supervisor
Vestal	Informal request.	1983	Radioactive waste.	All[1]	10 days prenotification.	Not listed	Route and schedule.	Shipper	Town Clerk
Yates County	Local Law No. 2 for 1980.	1980	Spent fuel rods.	All[1]	4 days prenotification.	Written	Amount and type of material, destination, route, carrier, schedule, vehicle registration, and operator's license.	Carrier	County Sheriff
NORTH CAROLINA									
State	N.C. Gen. Stat. Sec. 20-167.1(a).	1977	Spent fuel.	All	1 week prenotification.	Not listed	Amount and type of material, origin, destination, route, shipper, carrier, and receiver.	Carrier	Highway Patrol
OHIO									
State	Ohio Rev. Code Ann. Sec. 4163.07.	1980	Large quantities of special nuclear material or by-product material.	Into, through	2 days prenotification.	Written	Amount and type of material, origin, destination, route, shipper, carrier, and schedule.	Carrier or shipper	Disaster Services Agency
Beachwood	Business Regulation Code Chap. 733.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, carrier, and schedule.	Carrier or shipper	Mayor's Office

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
OHIO (cont.)									
Berea	Berea Traffic Code Chap. 475.	1979	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, and schedule.	Carrier or shipper	Director of Public Safety
Brooklyn	Ord. No. 1978-26.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, and schedule.	Carrier or shipper	Director of Public Safety

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
OHIO (cont.)									
Euclid	Health and Sanitation Code Chap. 1195	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, and schedule.	Carrier or shipper	Administrative Director
Maple Heights	General Offenses Code Chap. 662.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, carrier, and schedule.	Carrier or shipper	Director of Safety

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
OHIO (cont.)									
Mayfield Village	Local Code Chap. 747.03.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	3 days prenotification.	Written	Amount and type of material, origin, destination, route, carrier, and schedule.	Carrier or shipper	Safety Director
Shaker Heights	Health Code Chap. 383.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, carrier, and schedule.	Carrier or shipper	Director of Health

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
OHIO (cont.)									
South Euclid	Local Code Chap. 1145.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, carrier, and schedule.	Carrier or shipper	Safety Director
Strongsville	Strongsville Traffic Code Sec. 446.02.	1978	Plutonium isotopes exceeding 2 grams or 20 curies, and enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram.	All	Prenotification in order to obtain permit or waiver of permit. Timing not specified.	Written	Amount and type of material, route, schedule, and explanation of "urgent public policy" concern that necessitates shipment.	Carrier or shipper[20]	Director of Health
OREGON									
State	Or. Rev. Stat. Sec. 761.380(1).	1975	Class A explosives, flammable gases, and poisonous gases. Applies to shipments by rail only.	All	Prenotification as soon as known to railroad.	Not listed	Amount and type of material.	Carrier	Public Utility Commission
State	Or. Rev. Stat. Sec. 761.380(1).	1975	Class A explosives, flammable gases, and poisonous gases. Applies to shipments by rail only.	All	Annual reporting	Written	Amount and type of material.	Carrier	Public Utility Commission

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
PENNSYLVANIA									
Pennsylvania Turnpike	Turnpike Regs.	1984	Hazardous materials requiring placarding under federal regulations.	All	Per trip reporting at departure from Turnpike.	Written	Amount and type of material, route, carrier, and date.	Carrier	Turnpike Commission
RHODE ISLAND									
State	PUC Rules and Regs. Governing the Transportation of Radioactive Material Sec. III.	1978	Large quantity radioactive materials, any quantity of radioactive waste, and placarded shipments of radioactive materials or waste.	All[1]	4 hours to 2 weeks prenotification.	Written	Amount and type of material, origin, destination, route, carrier, schedule, vehicle identification, proof of insurance, and certifications of proper packaging and loading.	Carrier	Motor Carrier Examiner at Public Utilities Commission
State	Hazardous Waste Transporter Permit Rules and Regs. Sec. 5.05(b).	1980	Low-level radioactive waste, and hazardous wastes including those that are toxic, corrosive, flammable, irritants, strong sensitizers, detrimental to tissue, or generate pressure through decomposition or chemical reaction.	Out of	Within 10 days of delivery	Written	Copy of manifest.	Carrier	Dept. of Environmental Management
SOUTH CAROLINA									
State	S.C. Code Ann. Sec. 13-7-160(B).	1980	Radioactive waste.	All[1]	3 days prenotification.	Written	Amount and type of material, route, and schedule.	Shipper	Dept. of Health and Environmental Control
Charleston	Local Ord. No. 42.	1979	Radioactive materials, except: limited quantities as defined in 49 CFR 173.391, radiation sources used in nondestructive testing, teletherapy sources, medical devices, and materials being shipped for national defense purposes.(*)	All	2 days prenotification.	Not listed	Amount, type, and activity of material; route; shipper; carrier; receiver; and schedule.	Carrier or shipper	Chief of Police

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
TENNESSEE									
State	Tenn. Code Ann. Sec. 65-15-126.	1979	Spent fuel.	All	1-2 days prenotification.	Not listed	Amount and type of material, origin, destination, route, shipper, carrier, receiver, schedule, and vehicle.	Carrier	Public Service
TEXAS									
Baytown-La Porte Tunnel	Tunnel Regs. Sec. 11.	1979	Any new potentially hazardous material not listed in CFR.(*)	All[1]	2 days prenotification.	Not listed	Amount and type of material, and schedule.	Carrier	Tunnel Guard Station
Washburn Tunnel	Tunnel Regs. Sec. 11.	1979	Any new potentially hazardous material not listed in CFR.(*)	All[1]	2 days prenotification.	Not listed	Amount and type of material, and schedule.	Carrier	Tunnel Guard Station
VERMONT									
State[21]	Rules for Transportation of Hazardous Materials Action 6(III).	1983	Spent fuel, Large Quantity materials, and materials for which routes are controlled under 49 CFR 173.403.	All[1]	1 week prenotification.	Written	Amount and type of material, origin, destination, route, scheduled stops, shipper, carrier, receiver, schedule, certification of inspection, copies of any NRC approvals, emergency plan, and certificate of insurance.	Carrier	Agency of Transportation
State	Vt. Admin. Comp. Health Dept. Sec. 5-311.	Not given	Spent fuel; Large Quantity materials; Fissile Class I, II or III materials; and any carload, truckload, planeload, or boatload shipments of radioactive material.	All	2 days prenotification.	Phone or written	Amount and type of material, origin, destination, route, shipper, carrier, and schedule.	Shipper	Director of Occupational Health
Glover	Local Ord. (unnumbered).	1982	Radioactive waste.	All[1]	30 days prenotification.	Written	Amount and type of material, carrier, schedule, results of cask tests, amount of liability insurance, and emergency response plan.	Carrier	Board of Selectmen

(*) denotes that some commodities are banned.

Table 2.1. (continued)

State	Citation	Date Passed	Commodities Identified	Shipments Covered	Timing of Notice	Form of Notice	Information Required	Submitted By	Submitted To
VIRGINIA									
State	Regs. for Transportation of Hazardous Materials Sec. 3.05.	1980	Radioactive materials in quantities exceeding Type B limits.	All[1]	1 day prenotification.	Written or phone	Origin, destination, route, shipper, carrier, schedule, and carrier registration number.	Carrier	Coordinator of Emergency Services
State	Va. Haz. Waste Mgmt. Regs. Sec. 7.02.06.	1980	Ignitable, corrosive, reactive, or toxic wastes as specified in Va. Haz. Waste Mgmt. Regs. Sec. 3.00.	Into, out of, within	Annual reporting.	Written	Origin, destination, shipper, receiver, date, and manifest number for each shipment.	Carrier	Board of Health
Chesapeake Bay Bridge and Tunnel	Bridge and Tunnel Rules and Regs. Part I, Sec. 3; and Part IV, Sec. 9.18(c)(4).	Not given	Non-liquid manufactured articles containing radioactive materials as component parts, in quantities of less than 500 pounds.(*)	All[1]	1 hour prenotification.	Not listed	Amount and type of material.	Carrier	Bridge and Tunnel Police
Spotsylvania County	County Code Chap. 22.	1983	Plutonium isotopes exceeding 2 grams or 20 curies, enriched uranium (25% U-235) where the U-235 content exceeds 1 kilogram, elements with atomic numbers of 89 or more with activities exceeding 20 curies, spent fuel or mixed fission products with activities exceeding 20 curies, Large Quantity radioactive materials, Fissile Class III materials, and any other radioactive materials requiring an escort.	All	90 days prenotification.	Written	Amount and type of material, origin, destination, route, shipper, carrier, schedule,[22] and identification of driver.	Shipper	Coordinator of Emergency Services
Virginia Beach	Fire Code Sec. F-2700.2(2).	Not given	Classes A, B, or C explosives, and blasting agents.	All[1]	30 days prenotification to obtain permit.	Written	Destination, route, and schedule.	Carrier	Fire Dept.
Virginia Beach	Fire Code Sec. F-2704.17.	Not given	Classes A, B, or C explosives, and blasting agents.	All[1]	Notification upon arrival at terminal.	Phone	Amount and type of material, and carrier.	Carrier	Fire Dept.

(*) denotes that some commodities are banned.

Table 2.1. (continued)

NOTES:

1. This law does not specify which shipments are covered. By implication, the law indicates that all shipments are covered.
2. Exceptions are made in some cases when a hazardous waste transportation plan is in effect. See Ark. Hazardous Waste Management Code Secs. 16(e),(f).
3. The Colorado Dept. of Health was unaware of this law and had not promulgated rules to implement it.
4. This law was superseded by the state law, but remains in the New London Code.
5. The Georgia Board of Natural Resources has not promulgated rules to implement this law.
6. Under the provisions of this Act, the Illinois Environmental Protection Agency has the authority to require annual reports. However, no such reports are required at this time.
7. Ruled inconsistent by the Department of Transportation, but remains in the Covington Code.
8. This is an annual permit that is awarded on a discretionary basis after review by an independent consultant. It may act as a notification requirement in some cases.
9. By implication, spent fuel and other radioactive wastes.
10. Ruled inconsistent by the Department of Transportation, but remains in Michigan statutes.
11. Ruled invalid by a Federal District Court, but remains in Missoula code.
12. Truck traffic is usually banned from the Parkway, although exceptions are made in certain cases.
13. Ruled inconsistent by the Department of Transportation, but remains in county ordinances.
14. Ruled inconsistent by the Department of Transportation, but remains in Thruway rules.
15. This is a semi-annual permit that is awarded on a discretionary basis after review by the Thruway Authority and the New York State Department of Health. It may act as a notification requirement in some cases.
16. Ruled inconsistent by the Department of Transportation, but remains in bridge regulations.
17. Request for information only. No statutory authority.
18. Ruled inconsistent by the Department of Transportation, but remains in county code.
19. Ruled inconsistent by the Department of Transportation, but remains in bridge regulations.
20. Explanation of "urgent public policy" may be required from federal or state agencies.
21. Ruled inconsistent by the Department of Transportation, but remains in agency rules.
22. Only approximate date of shipment is required. Actual date must be supplied one day in advance.

3.0 ANALYSIS OF STATE AND LOCAL REQUIREMENTS

State and local notification requirements can be compared and analyzed along a variety of dimensions. This section provides a brief examination of the requirements in 12 categories. The first category discusses the purposes of the laws and the uses of the information that is obtained. The next eight categories follow directly from Table 2.1: geographic distribution, date of adoption, commodities covered, shipments covered, timing of notification, form of notification, information required, and parties involved. The last three categories describe the degree of enforcement, implementation costs, and impacts on carriers and shippers.

In several parts of this discussion, notification requirements have been split into three jurisdictional categories: states, localities, and facilities. Cities and counties are included under localities, while facilities encompass bridges, tunnels, airports, and highways. This division helps to illustrate the differences in purpose, form, and timing of notification depending upon the jurisdiction involved.

3.1 PURPOSE AND USE OF INFORMATION

Unless a statute contains an expressly stated purpose (and sometimes even then), divining the reasons for a particular legislative enactment entails the imprecise art of statutory interpretation. State and local laws present special difficulties in this regard, because legislative histories are extremely rare. Such systematic interpretation is therefore beyond the scope of this report. However, conversations with state and local officials indicate that there are at least seven main reasons for notification requirements.

1) The most commonly cited purpose of the notification requirements is to collect information to facilitate planning. Over two-thirds of the states, localities, and facilities with notification requirements noted this as an important purpose of their laws. States, localities, and facilities with notification requirements often mentioned the need to gather information about

the types and quantities of materials shipped through their jurisdictions and the routes used so that they can plan to enhance the safety of such shipments. Roughly half of those that mentioned this rationale actually seem to use the information. In particular, almost all of the states mentioning this purpose generally use the information they receive to prepare or revise plans. Most of the localities that mentioned this purpose have either not gathered any data or simply have filed it for future use. Most of the facilities that mentioned this purpose do use the information for planning and policy development, although not to be extent that is typical of states.

2) Another commonly mentioned purpose for notification is to facilitate emergency response. This applies purely to prenotification requirements and allows agencies to alert response teams when a potentially hazardcus shipment is due. This purpose is most common among localities, while facilities often mention it as a secondary reason for their laws. Many of the localities that mentioned this purpose have never received a notification, and hence the actual use of this information cannot be tested. Those states, localities, and facilities that have received notifications usually seem to use the information for this purpose.

3) An additional purpose of prenotification requirements is to arrange escorts. This is particularly common for facilities, which usually provide a police escort for the shipment so as to keep other vehicles at a distance and thereby minimize the chance of an accident. About three-quarters of facilities with prenotification requirements cited this as the primary purpose of the laws, and a few states and localities noted it as a primary or secondary purpose. Those citing this as a reason for prenotification invariably provide the escorts as intended.

4) Some states and localities noted that notification requirements were intended to increase the awareness of shipments. In these cases, very little is actually done with the information that is

obtained, but the states and localities feel the information is valuable so that they can respond to requests from elected officials, the press, and the general public. This purpose and use of information is rarely mentioned in the laws themselves, but about one-quarter of the states and localities with notification laws noted shipment awareness as an advantage. This use applies primarily but not exclusively to prenotification requirements.

5) A much less common purpose of notification requirements is to allow shipments to be inspected in advance. Concerns about the safety of trucks have been increasing in recent years among governments and shippers, particularly in response to the significant deregulation of the motor carrier industry in 1980. A few states and localities have decided that inspections of shipments of certain hazardous materials are essential, and have adopted prenotification requirements as a way to ensure this. These states and localities seem to actually use the information for this purpose. Facilities also usually reserve the right to inspect shipments in advance, but relatively few inspections seem to be made.

6) Another purpose of notification laws is to track shipments of hazardous waste to prevent unauthorized disposal. Slightly less than one-third of the notification requirements have this general purpose. This usually involves per trip reporting by some combination of shippers, carriers, and receivers to ensure that wastes are delivered as intended. It may also include matching per trip reports with periodic reports to ensure that all loads are properly reported. These reporting requirements are used only by states, and all of them do actually match the per trip reports they receive. Many also match their per trip reports with monthly or annual reports, although at least one state noted that it has not done so due to manpower shortages. This purpose is focused mostly on the tracking and proper disposal of materials, and is only secondarily focused on transportation.

7) The final purpose of notification requirements mentioned by state and local officials was to implicitly ban shipments by requiring long prenotification periods. Of course, no official admitted that the law in his or her jurisdiction was intended to serve such a purpose, but several commented that other laws seemed to be intended as bans. Whether intentional or not, some prenotification laws seem to have had this effect since shippers and carriers have rerouted shipments to avoid them.

These purposes can of course be combined in many ways. Many states, localities, and facilities intend their prenotification requirements to facilitate emergency response and to provide information for planning purposes. Several facilities use the information they receive to arrange escorts and to alert emergency units. Many other combinations of purposes were mentioned by at least one state, locality, or facility.

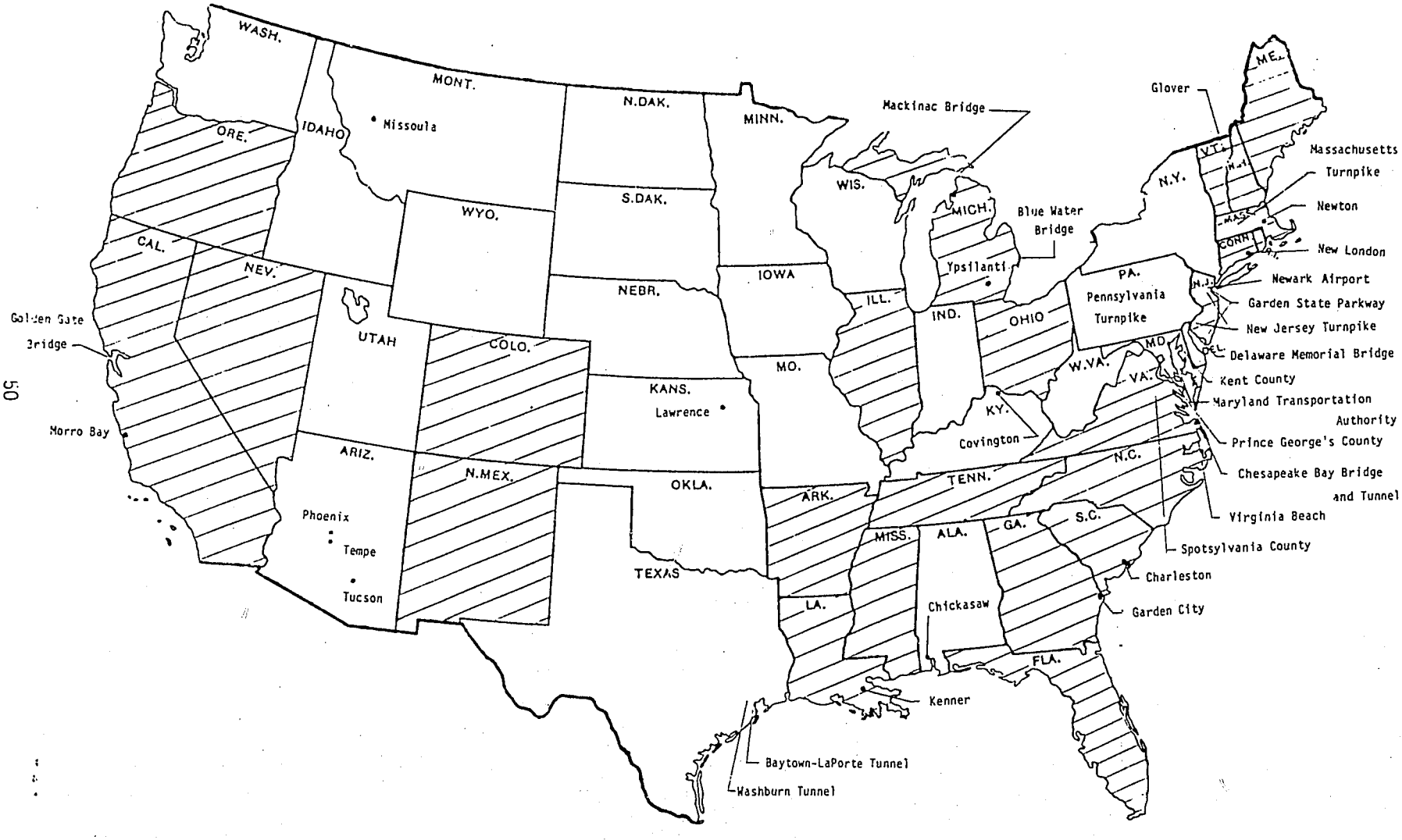
It is worth noting that a few states, localities, and facilities have dropped their notification requirements since they have not found the information to be useful. For example, Alabama had a two week prenotification requirement that was abolished in March 1983. Several localities have made similar decisions.

3.2 GEOGRAPHIC DISTRIBUTION

The states, localities, and facilities with notification laws are not randomly distributed throughout the nation. Figure 3.1 is a map of the U.S. that shows governments with notification requirements. Because of the large number of notification requirements in New York State and Cuyahoga County, Ohio, separate maps of those areas have been prepared and are presented as Figures 3.2 and 3.3, respectively.

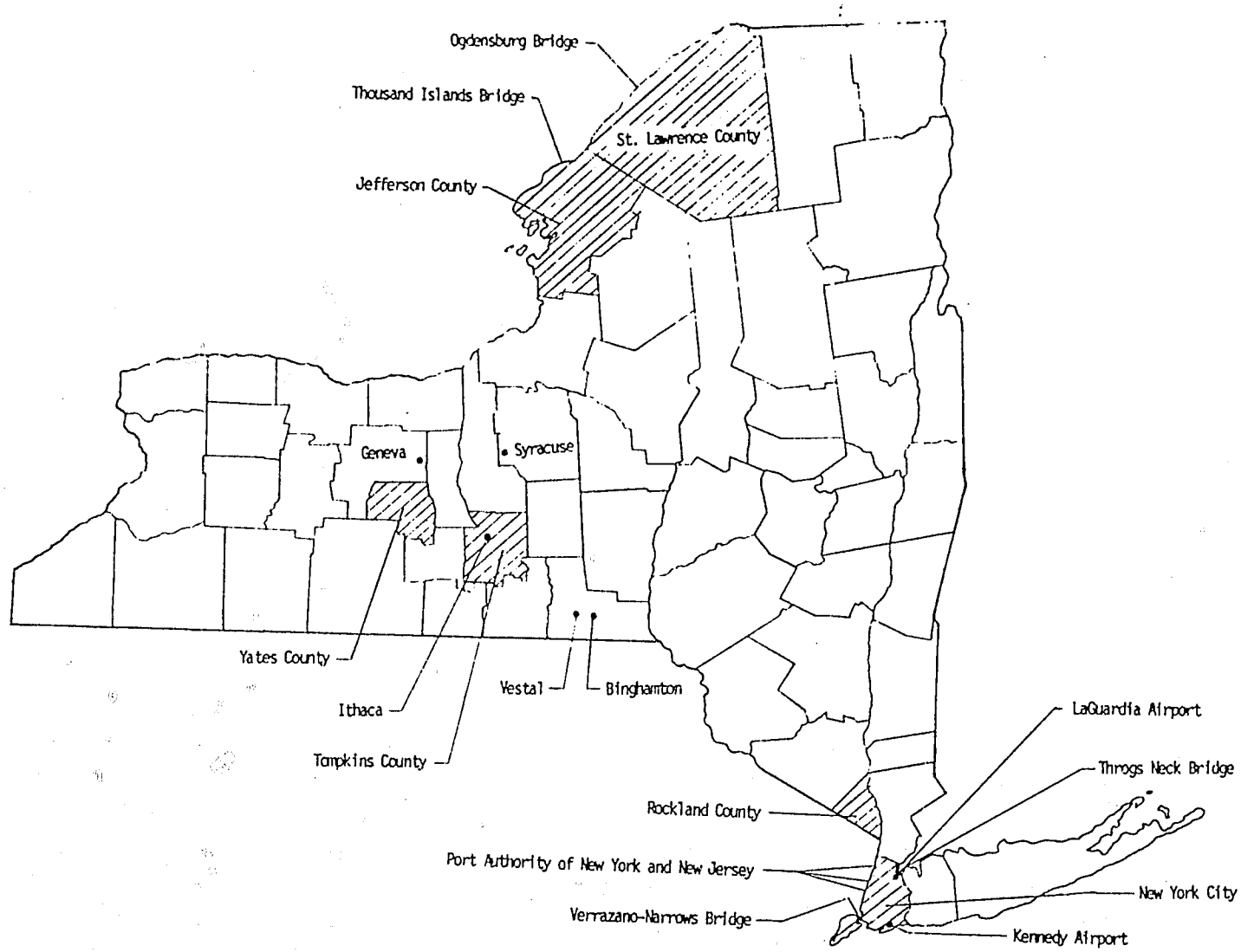
As can be seen from the maps, notification requirements tend to be concentrated in particular areas. There are at least two explanation for this. First, many of the states with notification laws have major nuclear facilities, particularly facilities that generate or receive nuclear waste or spent fuel. Among the states in this category are Nevada, New Mexico, South Carolina, and Tennessee. This factor may also help to account for laws in neighboring states, such as California, Georgia, and

Figure 3.1. Jurisdictions with Notification Requirements in U.S.



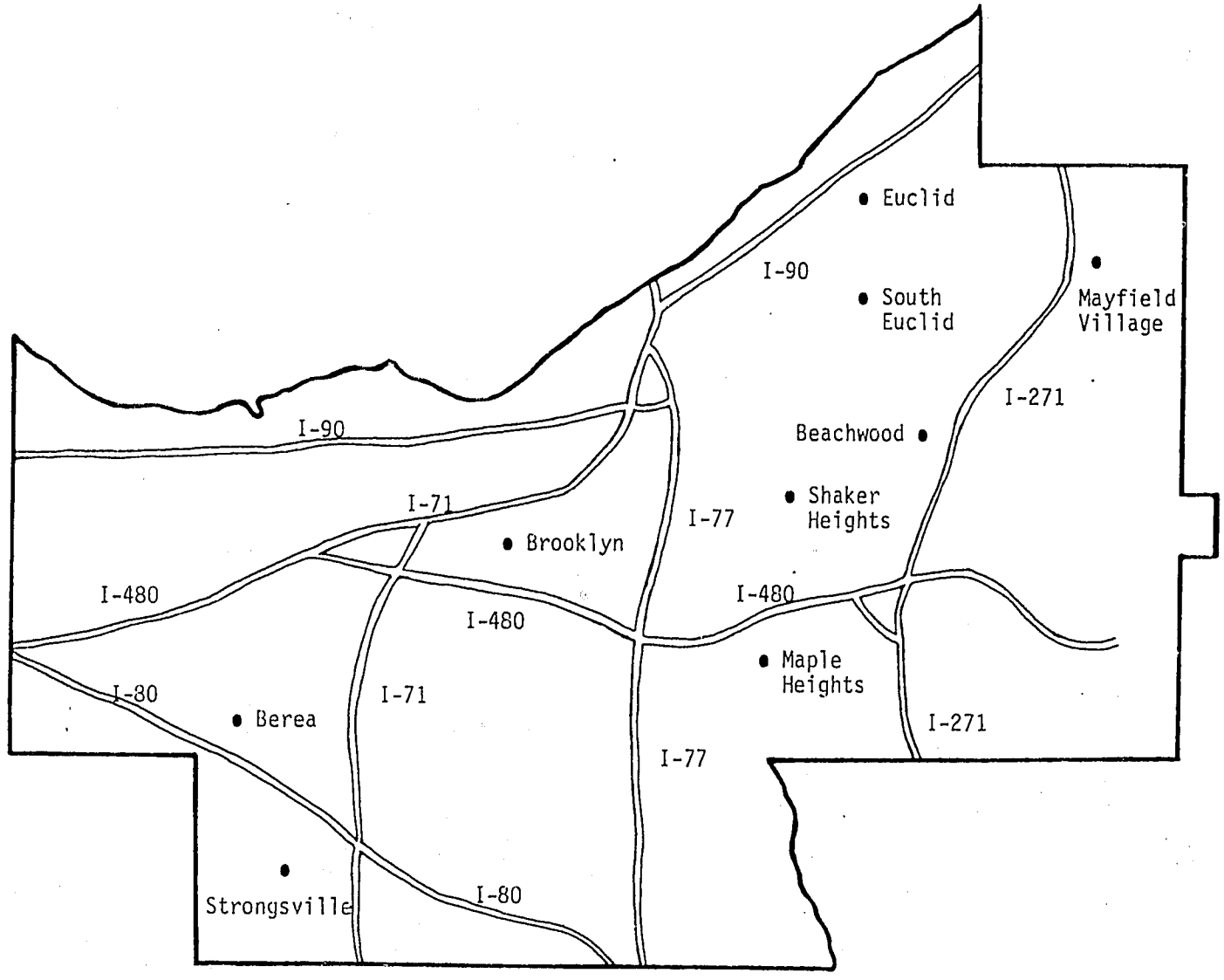
Note: Requirements in New York and Cuyahoga County, Ohio are not shown. See Figures 3.2 and 3.3.

Figure 3.2. Jurisdictions with Notification Requirements in New York



Note: New York Thruway is not shown.

Figure 3.3. Jurisdictions with Notification Requirements in Cuyahoga County, Ohio



North Carolina, and for laws in nearby localities, including Garden City, Georgia and Spotsylvania County, Virginia.

Second, several other states, localities, and facilities with notification requirements lie along major transportation routes for radioactive materials. Michigan and Vermont, for example, have routes that could be used to ship spent fuel from Canada to South Carolina. Their laws were passed at least in part as a response to announcements of shipments on these routes. Similarly, the nine towns in Cuyahoga County, Ohio that have prenotification laws are located along major Interstate highways used to ship radioactive waste from the Eastern Seaboard to facilities in the Midwest and in Washington State. Similar routing effects were noted in a few cases for other hazardous materials. An example of this is Kenner, Louisiana's law requiring notification for shipments of explosives. Another example is Chickasaw, Alabama's law requiring prenotification for shipments of PCBs.

These two factors account for the bulk of notification laws. If transportation patterns change, or if nuclear facilities are opened in new areas, other state and local governments may consider notification requirements.

3.3 DATE OF ADOPTION

Figures 3.4(A) and 3.4(B) show the dates of adoption of state and local notification standards, respectively. The dates given reflect the earliest statement of a law in substantially its present form. For laws with multiple notification requirements, only one date is shown. There was little activity in this area until the late 1970s. The number of local ordinances requiring notification then rose rapidly, with new additions reaching a peak around 1980. The number of new local notification ordinances approved has since decreased to about three per year. State activity has remained steadier, however, with roughly five new laws being adopted each year during the 1980s.

Data on facilities is much less revealing. Many of the regulations relating to transportation of radioactive or other hazardous materials on

Figure 3.4(A). Dates of Notification Requirements - State

1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
									CA				
									ME				
									NM			AR	
									OH		FL	LA	
						CT			RI	CO	MI	MA	
						NJ		GA	SC	IL	MS	ME	
FL				OR		NC	RI	TN	VA	NV	NH	VT	AR

Figure 3.4(B). Dates of Notification Requirements - Local

1977	1978	1979	1980	1981	1982	1983	1984
New York, NY	New London, CT Beachwood, OH Brooklyn, OH Euclid, OH Maple Heights, OH Mayfield Village, OH Shaker Heights, OH South Euclid, OH Strongsville, OH	Morro Bay, CA Garden City, GA Newton, MA Ypsilanti, MI Berea, OH Charleston, SC	Covington, KY Missoula, MT Prince George's County, MD Geneva, NY Ithaca, NY St. Lawrence County, NY Syracuse, NY Tompkins County, NY Yates County, NY	Tucson, AZ Kent County, MD Binghamton, NY	Phoenix, AZ Lawrence, KS Jefferson County, NY New York, NY Glover, VT	Vestal, NY Spotsylvania County, VA	Chickasaw, AL Kenner, LA Rockland County, NY

such facilities were imposed when the facilities were built, so an analysis of the dates of adoption would only reveal when they were constructed, not when concerns arose about such materials.

3.4 COMMODITIES COVERED

Detailed listings of commodities covered by state and local notification laws are provided in Table 2.1. Many of these commodity definitions are very general, making it difficult to determine precisely which materials are intended to be covered. Other definitions used in notification laws employ terms similar to those used in federal classifications but have different definitions of those terms. On the other hand, some notification laws employ precise definitions or utilize federal classifications. It should be noted that the DOT has consistently held that federal commodity definitions are exclusive, and other definitions have no effect.[20] For purposes of analysis, consistent, aggregated descriptions of commodities were developed during the preparation of this report, and notification laws were classified into the appropriate categories. These results are given in Tables 3.1(A), 3.1(B) and 3.1(C). These tables classify commodities into four broad categories:

- spent fuel and/or high level radioactive waste;
- other radioactive materials, including low level waste and all radioactive materials that are not waste products;
- hazardous waste; and
- other hazardous materials.

In cases where a jurisdiction has more than one requirement, those requirements have been combined in the table.

As can be noted from the totals in the tables, the commodities covered by state, local, and facility requirements vary considerably. States are most concerned about spent fuel and high level waste, but also have a large number of notification requirements covering other radioactive materials and hazardous waste. Only three states, Arkansas, Georgia, and Oregon, have laws covering hazardous materials, and Oregon's law applies only to railroads.

Table 3.1(A). Commodities Covered by Notification Requirements - State

	Spent Fuel and/or High Level Waste	Other Radioactive Materials	Hazardous Wastes	Other Hazardous Materials
Arkansas			X	X
California	X			
Colorado			X	
Connecticut	X	X		
Florida	X	X		
Georgia	X	X	X	X
Illinois			X	
Louisiana			X	
Maine		X	X	
Massachusetts	X		X	
Michigan	X	X		
Mississippi	X	X		
Nevada	X	X		
New Hampshire			X	
New Jersey	X	X		
New Mexico	X	X		
North Carolina	X			
Ohio	X	X		
Oregon				X
Rhode Island	X	X	X	
South Carolina	X	X		
Tennessee	X			
Vermont	X	X		
Virginia	X	X	X	
TOTAL	17	14	10	3

Table 3.1(B). Commodities Covered by Notification Requirements - Local

	Spent Fuel and/or High Level Waste	Other Radioactive Materials	Hazardous Wastes	Other Hazardous Materials
Chickasaw, AL			X	
Phoenix, AZ			X	X
Tempe, AZ				X
Tucson, AZ	X	X		
Morro Bay, CA	X	X		
New London, CT	X	X		
Garden City, GA	B	X		
Lawrence, KS	B	X		
Covington, KY	X	X	X	X
Kenner, LA				X
Kent County, MD	X			
Prince George's County, MD	X	X		
Newton, MA	X			
Ypsilanti, MI	B	X		
Missoula, MT	X	X		
Binghamton, NY	X			
Geneva, NY	X	X		
Ithaca, NY	X	X		
Jefferson County, NY	X	X		
New York, NY	X	X		X
Rockland County, NY	X	X		
St. Lawrence County, NY	X	X		
Syracuse, NY	X	X		
Tompkins County, NY	X	X		
Vestal, NY	X	X		
Yates County, NY	X			

Table 3.1(B). (continued)

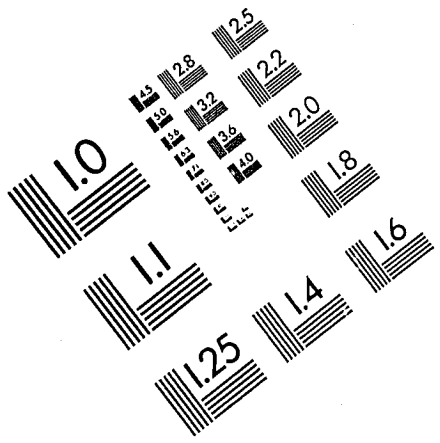
	Spent Fuel and/or High Level Waste	Other Radioactive Materials	Hazardous Wastes	Other Hazardous Materials
Ohio towns (9 towns)	X	X		
Charleston, SC	B	X		
Glover, VT	X	X		
Spotsylvania County, VA	X	X		
Virginia Beach, VA				X
TOTAL	30	30	3	6

Table 3.1(C). Commodities Covered by Notification Requirements - Facilities

	Spent Fuel and/or High Level Waste	Other Radioactive Materials	Hazardous Wastes	Other Hazardous Materials
Golden Gate Bridge, CA	X	X		
Delaware Memorial Bridge, DE	X	X	X	X
Francis Scott Key Bridge, MD	X	X		X
Harry W. Nice Memorial Bridge, MD	X	X		X
John F. Kennedy Memorial Highway, MD	X	X		X
Susquehanna River Bridge, MD	X	X		X
William Preston Lane, Jr. Memorial Bridge, MD	X	X		X
Massachusetts Turnpike Authority, MA	X	X		
Blue Water Bridge, MI	B	B		X
Mackinac Bridge, MI	X	X		X
Garden State Parkway, NJ	X	X		
Newark International Airport, NJ	X	X		X
New Jersey Turnpike, NJ	X	X		X
Bayonne Bridge, NY	X	X		X
George Washington Bridge Expressway, NY	B	X		
George Washington Bridge Lower Level, NY	B	X		
George Washington Bridge Upper Level, NY	X	X		X
Goethals Bridge, NY	X	X		X
Holland Tunnel, NY	B	X		
Kennedy International Airport, NY	X	X		X
La Guardia Airport, NY	X	X		X
Lincoln Tunnel, NY	B	X		

Table 3.1(C). (continued)

	Spent Fuel and/or High Level Waste	Other Radioactive Materials	Hazardous Wastes	Other Hazardous Materials
New York Thruway, NY	X	X		
Ogdensburg Bridge, NY	X	X		X
Outerbridge Crossing, NY	X	X		X
Thousand Islands Bridge, NY	X	X		X
Throgs Neck Bridge, NY	B	B		X
Verrazano-Narrows Bridge Upper Level, NY	B	X		
Pennsylvania Turnpike, PA	X	X	X	X
Baytown-La Porte Tunnel, TX	B	B		X
Washburn Tunnel, TX	B	B		X
Chesapeake Bay Bridge and Tunnel, VA	B	X		
TOTAL	22	28	2	22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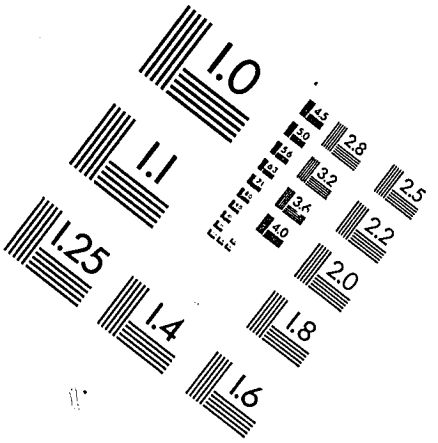
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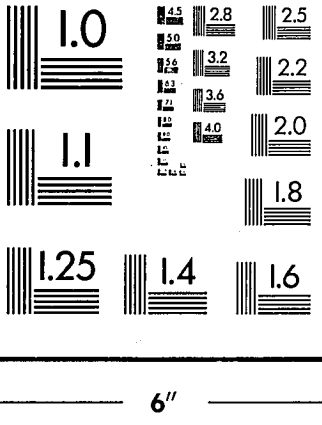
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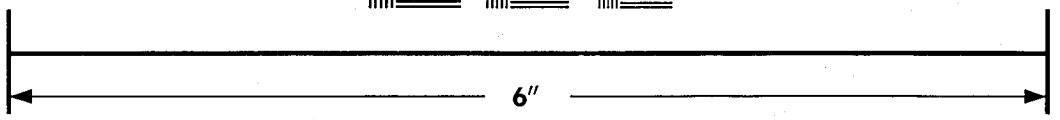
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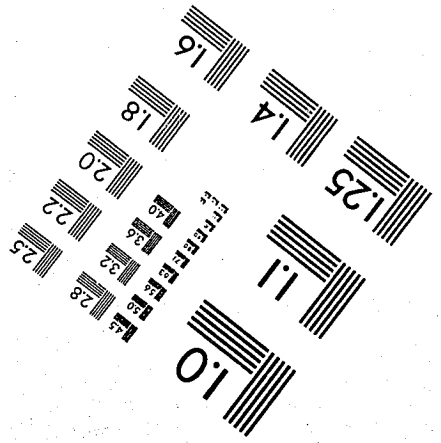
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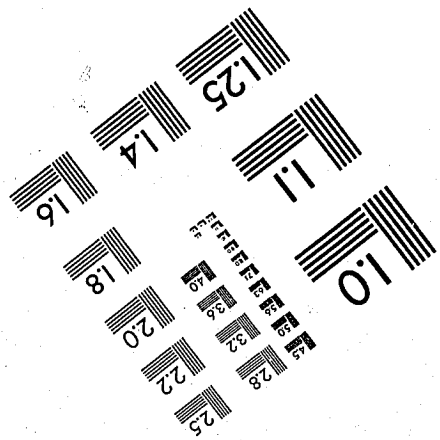
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Localities show strong concerns with radioactive materials and very little interest in notification requirements for other hazardous materials. A total of 30 localities have notification laws for spent fuel and/or high level waste, and an identical number have such laws for other radioactive materials. The latter number includes several laws that cover unspecified "radioactive waste", and hence would include low level waste. In four cases, other radioactive materials are covered but spent fuel is not. This seemingly anomalous situation results from local bans on the transportation of spent fuel or high level waste. These bans are marked in the table with a "B".

In contrast to this extensive interest in radioactive materials, localities display very limited interest in other hazardous commodities. Only three require notification for shipments of hazardous waste and only six are interested in other hazardous materials. Four of the six regulations for other hazardous materials apply exclusively to explosives.

Facilities show a strikingly different pattern from either states or localities. Twenty-two facilities regulate spent fuel and/or high level waste, while 28 require notification for other radioactive materials. The difference is again accounted for by bans. Furthermore, four of the facilities with notification requirements ban both categories of materials. Only two facilities are interested in hazardous waste. However, 22 facilities require notification for at least some other hazardous materials. This usually includes explosives and sometimes includes flammable materials. Many of the facilities also ban a variety of hazardous materials.

It is interesting to note the similarity of the commodity definitions used by many of the localities and facilities. This often results from explicit exchanges of information between governments. For example, eight of the nine Ohio towns with notification requirements employ identical definitions. This results in large part from interactions through the Cuyahoga County Mayors and City Managers Association. Among the facilities, the Maryland Transportation Authority simply copied its definition from the one used by the Port Authority of New York and New Jersey.

The commodities covered by a certain law can often be linked to the law's purpose. Laws that are intended to collect information for planning or tracking of materials often cover more commodities than those intended to alert emergency response units or to arrange for inspections. Similarly, there are many specific examples for which the list of commodities can be explained by the particular circumstances that led to the adoption of a law. For example, Chickasaw, Alabama's law requiring notification for shipments of PCBs stems directly from a proposal to build a PCB shipping facility in the area.

3.5 SHIPMENTS COVERED

Of the total of 136 notification requirements, 109 either implicitly or explicitly cover all types of shipments, including those into, out of, within, or through the jurisdiction involved. The majority of those that remain focus on shipments starting and/or ending within the jurisdiction. The requirements that do not cover all types of shipments are almost exclusively state laws; only six localities and none of the facilities refrain from regulating all shipments. This is hardly surprising, since the distinctions between shipments into, out of, within, or through a jurisdiction are meaningless for a facility such as a bridge or tunnel. To some extent, these distinctions have little practical effect for many of the smaller localities since all shipments of radioactive and other hazardous materials are through shipments.

Although many of the notification requirements theoretically apply to both truck and rail traffic, very few seem to have any real focus on railroads. Only the state of Oregon and the city of Kenner, Louisiana have laws exclusively targeted on railroads, and Kenner has a separate and parallel law for trucks.

3.6 TIMING OF NOTIFICATION

Tables 3.2(A), 3.2(B), and 3.2(C) classify the notification requirements based upon the timing involved. Prenotification laws require information to be provided in advance. Periodic reporting involves submitting summaries of shipments on a scheduled basis, while per trip

Table 3.2(A). Timing of Notification Requirements - State

	Prenotification	Reporting Periodic	Reporting Per Trip
Arkansas	X	X	X
California	X		
Colorado		X	
Connecticut	X		
Florida	X		X
Georgia	X	X	X
Illinois		X	
Louisiana		X	X
Maine	X		X
Massachusetts	X	X	X
Michigan	X		
Mississippi	X		X
Nevada	X		
New Hampshire	X	X	X
New Jersey	X		
New Mexico	X		
North Carolina	X		
Ohio	X		
Oregon	X	X	
Rhode Island	X		X
South Carolina	X		
Tennessee	X		
Vermont	X		
Virginia	X	X	
TOTAL	21	9	9

Table 3.2(B). Timing of Notification Requirements - Local

	Prenotification	Reporting Periodic	Reporting Per Trip
Chickasaw, AL	X		
Phoenix, AZ	X		
Tempe, AZ	X		
Tucson, AZ	X		
Morro Bay, CA	X		
New London, CT	X		
Garden City, GA	X		
Lawrence, KS		X	
Covington, KY	X		
Kenner, LA	X		
Kent County, MD	X		
Prince George's County, MD	X		
Newton, MA	X		
Ypsilanti, MI	X		
Missoula, MT	X		
Binghamton, NY	X		
Geneva, NY	X		
Ithaca, NY	X		
Jefferson County, NY	X		
New York, NY	X		
Rockland County, NY	X		
St. Lawrence County, NY	X		
Syracuse, NY	X		
Tompkins County, NY	X		
Vestal, NY	X		
Yates County, NY	X		

Table 3.2(B). (continued)

	Prenotification	Reporting Periodic	Reporting Per Trip
Ohio towns (9 towns)	X		
Charleston, SC	X		
Glover, VT	X		
Spotsylvania County, VA	X		
Virginia Beach, VA	X		
TOTAL	38	1	0

Table 3.2(C). Timing of Notification Requirements - Facilities

	Prenotification	Reporting	
		Periodic	Per Trip
Golden Gate Bridge, CA	X		
Delaware Memorial Bridge, DE	X		
Francis Scott Key Bridge, MD	X		
Harry W. Nice Memorial Bridge, MD	X		
John F. Kennedy Memorial Highway, MD	X		
Susquehanna River Bridge, MD	X		
William Preston Lane, Jr. Memorial Bridge, MD	X		
Massachusetts Turnpike Authority, MA	X		
Blue Water Bridge, MI	X		
Mackinac Bridge, MI	X		
Garden State Parkway, NJ	X		
Newark International Airport, NJ	X		
New Jersey Turnpike, NJ	X		
Bayonne Bridge, NY	X		
George Washington Bridge Expressway, NY	X		
George Washington Bridge Lower Level, NY	X		
George Washington Bridge Upper Level, NY	X		
Goethals Bridge, NY	X		
Holland Tunnel, NY	X		
Kennedy International Airport, NY	X		
La Guardia Airport, NY	X		
Lincoln Tunnel, NY	X		

Table 3.2(C). (continued)

	Prenotification	Reporting Periodic	Reporting Per Trip
New York Thruway, NY	X		
Ogdensburg Bridge, NY	X		
Outerbridge Crossing, NY	X		
Thousand Islands Bridge, NY	X		
Throgs Neck Bridge, NY	X		
Verrazano-Narrows Bridge Upper Level, NY	X		
Pennsylvania Turnpike, PA			X
Baytown-La Porte Tunnel, TX	X		
Washburn Tunnel, TX	X		
Chesapeake Bay Bridge and Tunnel, VA	X		
TOTAL	31	0	1

reporting requires that information be submitted after every trip, often in the form of a copy of the shipment's manifest. The timing of notification is closely related to the purpose of the law. For example, laws intended to alert emergency response agencies invariably require prenotification, while those whose purpose is information collection for planning often rely on reporting requirements instead.

Major differences between states, localities, and facilities can be noted from these tables. While 21 states require prenotification, 9 use periodic reporting and 9 use per trip reporting, indicating a rough balance between the two general systems. Localities, on the other hand, almost exclusively use prenotification. Only Lawrence, Kansas, has a periodic reporting system. Facilities likewise favor advance notification, with the Pennsylvania Turnpike being the only one to use a reporting system.

Greater detail about the timing of notification is provided in Tables 3.3(A), 3.3(B), 3.3(C). States generally have relatively brief notification periods; most are less than a week and a majority are less than three days. Localities have considerably longer periods, with well over half requiring four days or more. Facilities tend towards the opposite extreme, with most requiring two hours or less.

3.7 FORM OF NOTIFICATION

For those requirements that specify a form of notification, written notification is more common than notification by phone. Much of this pattern stems from the exclusive use of written forms for the reporting requirements. For prenotification requirements, the form of notice tends to vary depending upon the timing involved. Requirements with brief periods for advance notification usually provide for phone calls, while those with longer periods usually require written notification. Many requirements do not specify the form of notice that is required.

Table 3.3(A). Period or Frequency of Notification - State

	PRENOTIFICATION PERIOD						FREQUENCY OF REPORTING		
	1 hr. or less	2-23 hrs.	1 day	2-3 days	4-13 days	14 days or more	Yrly	Mthly	Per Trip
Arkansas			X					X	X
California				X					
Colorado[1]									
Connecticut		X							
Florida				X	X	X			X
Georgia	X						X		X
Illinois							X		
Louisiana							X		X
Maine			X			X			X
Massachusetts						X	X	X	X
Michigan						X			
Mississippi					X				X
Nevada		X							
New Hampshire					X	X	X		X
New Jersey					X				
New Mexico			X						
North Carolina					X				
Ohio				X					
Oregon[2]							X		
Rhode Island		X							X
South Carolina				X					
Tennessee			X						
Vermont				X	X				
Virginia			X				X		
TOTAL	1	3	5	5	6	5	7	2	9

NOTES: [1]Requires periodic reporting at unspecified intervals.
[2]Requires prenotification as soon as known.

Table 3.3(B). Period or Frequency of Notification - Local

	PRENOTIFICATION PERIOD						FREQUENCY OF REPORTING		
	1 hr. or less	2-23 hrs.	1 day	2-3 days	4-13 days	14 days or more	Yrly	Mthly	Per Trip
Chickasaw, AL[3]		X							
Phoenix, AZ[4]									
Tempe, AZ[4]									
Tucson, AZ				X					
Morro Bay, CA						X			
New London, CT						X			
Garden City, GA					X				
Lawrence, KS								X	
Covington, KY									
Kenner, LA	X								
Kent County, MD			X						
Prince George's County, MD				X					
Newton, MA			X						
Ypsilanti, MI				X					
Missoula, MT[4]			X						
Binghamton, NY				X					
Geneva, NY						X			
Ithaca, NY						X			
Jefferson County, NY			X						
New York, NY				X		X			
Rockland County, NY[4]									
St. Lawrence County, NY					X				
Syracuse, NY		X							
Tompkins County, NY[4]									
Vestal, NY					X				
Yates County, NY					X				

Table 3.3(B). (continued)

	PRENOTIFICATION PERIOD						FREQUENCY OF REPORTING		
	1 hr. or less	2-23 hrs.	1 day	2-3 days	4-13 days	14 days or more	Yrly	Mthly	Per Trip
Mayfield Village, OH				X					
Ohio towns (8 towns)						X			
Charleston, SC				X					
Glover, VT						X			
Spotsylvania County, VA						X			
Virginia Beach, VA	X					X			
TOTAL	2	2	4	7	4	16	0	1	0

NOTES: [3]Prior to 8:00 A.M. on day of arrival.
[4]Prenotification at unspecified time.

Table 3.3(C). Period or Frequency of Notification - Facilities

	PRENOTIFICATION PERIOD						FREQUENCY OF REPORTING		
	1 hr. or less	2-23 hrs.	1 day	2-3 days	4-13 days	14 days or more	Yrly	Mthly	Per Trip
Golden Gate Bridge, CA	X								
Delaware Memorial Bridge, DE	X								
Francis Scott Key Bridge, MD	X								
Harry W. Nice Memorial Bridge, MD	X								
John F. Kennedy Memorial Bridge, MD	X								
Susquehanna River Bridge, MD	X								
William Preston Lane, Jr. Memorial Bridge, MD	X								
Massachusetts Turnpike Authority, MA[5]									
Blue Water Bridge, MI				X					
Mackinac Bridge, MI		X							
Garden State Parkway, NJ					X				
Newark International Airport, NJ			X						
New Jersey Turnpike, NJ[6]									
Bayonne Bridge, NY		X							
George Washington Bridge Expressway, NY[6]									
George Washington Bridge Lower Level, NY[6]									

Table 3.3(C). (continued)

	PRENOTIFICATION PERIOD						FREQUENCY OF REPORTING		
	1 hr. or less	2-23 hrs.	1 day	2-3 days	4-13 days	14 days or more	Yrly	Mthly	Per Trip
George Washington Bridge Upper Level, NY		X							
Goethals Bridge, NY		X							
Holland Tunnel, NY[6]									
Kennedy International Airport, NY			X						
La Guardia Airport, NY			X						
Lincoln Tunnel, NY[6]									
New York Thruway[5]									
Ogdensburg Bridge, NY				X					
Outerbridge Crossing, NY		X							
Thousand Islands Bridge, NY[6]									
Pennsylvania Turnpike, PA									X
Throgs Neck Bridge, NY		X							
Verrazano-Narrows Bridge Upper Level, NY		X							
Baytown-La Porte Tunnel, TX				X					
Washburn Tunnel, TX				X					
Chesapeake Bay Bridge and Tunnel, VA	X								
TOTAL	8	7	3	4	1	0	0	0	1

NOTES: [5]Prenotification at variable times.
[6]Prenotification at unspecified times.

3.8 INFORMATION REQUIRED

The specific information required by each notification law is given in Table 2.1. The requirements most useful for analysis fall into five categories:

- amount and type of material;
- origin and destination of the shipment;
- route;
- schedule, usually including the dates and times of arrivals at specified points such as the boundary of the jurisdiction involved; and
- copies of the manifest.

These five categories are shown in Tables 3.4(A), 3.4(B), and 3.4(C).

Differences among the requirements of states, localities, and facilities are again apparent. States focus most heavily on the amount and type of material, but also exhibit strong interest in the origin and/or destination, route, and schedule of the shipment. Localities are concerned with the amount and type of material, the route, and the schedule, but generally are not as interested in the origin and/or destination of the load. Facilities are very likely to require information about the amount and type of material, are somewhat interested in the schedule of shipments, and are little concerned with anything else. Also, only states require copies of manifests.

The information that is required tends to vary depending upon the purpose of the law. Laws intended to collect information for planning purposes generally require the most information, while those that are used to arrange escorts seem to require the least. These differences in purpose explain most of the differences in information required by states, localities, and facilities.

Table 3.4(A). Information Required for Notification - State

	Amount and Type	Origin and/or Destination	Route	Schedule	Manifest
Arkansas	X	X			X
California		X		X	
Colorado					
Connecticut	X	X	X	X	
Florida	X	X	X	X	
Georgia	X	X	X	X	X
Illinois	X				
Louisiana	X				X
Maine	X	X	X		X
Massachusetts	X	X	X	X	X
Michigan	X	X	X	X	
Mississippi	X		X	X	X
Nevada	X	X		X	
New Hampshire	X		X		X
New Jersey	X	X	X	X	
New Mexico	X	X	X	X	
North Carolina	X	X	X		
Ohio	X	X	X	X	
Oregon	X				
Rhode Island	X	X	X	X	X
South Carolina	X		X	X	
Tennessee	X	X	X	X	
Vermont	X	X	X	X	
Virginia		X	X	X	
TOTAL	21	17	17	16	8

Table 3.4(B). Information Required for Notification - Local

	Amount and Type	Origin and/or Destination	Route	Schedule	Manifest
Chickasaw, AL			X	X	
Phoenix, AZ	X		X		
Tempe, AZ	X		X	X	
Tucson, AZ	X	X	X	X	
Morro Bay, CA	X			X	
New London, CT	X	X	X	X	
Garden City, GA	X	X	X	X	
Lawrence, KS	X	X	X	X	
Covington, KY	X	X			
Kenner, LA	X	X	X	X	
Kent County, MD					
Prince George's County, MD	X	X	X	X	
Newton, MA	X		X	X	
Missoula, MT	X	X	X	X	
Ypsilanti, MI	X		X	X	
Binghamton, NY	X		X	X	
Geneva, NY	X	X	X	X	
Ithaca, NY	X	X	X	X	
Jefferson County, NY	X		X	X	
New York, NY	X	X	X	X	
Rockland County, NY				X	
St. Lawrence County, NY	X		X	X	
Syracuse, NY	X		X	X	
Tompkins County, NY	X		X		
Vestal, NY			X	X	
Yates County, NY	X	X	X	X	

Table 3.4(B). (continued)

	Amount and Type	Origin and/or Destination	Route	Schedule	Manifest
Ohio towns (9 towns)	X	X	X	X	
Charleston, SC	X		X	X	
Glover, VT	X			X	
Spotsylvania County, VA	X	X	X	X	
Virginia Beach, VA	X	X	X	X	
TOTAL	35	23	34	35	0

Table 3.4(C). Information Required for Notification - Facilities

	Amount and Type	Origin and/or Destination	Route	Schedule	Manifest
Golden Gate Bridge, CA	X				
Delaware Memorial Bridge, DE	X				
Francis Scott Key Bridge, MD	X			X	
Harry W. Nice Memorial Bridge, MD	X			X	
John F. Kennedy Memorial Bridge, MD	X			X	
Susquehanna River Bridge, MD	X			X	
William Preston Lane Memorial Bridge, MD	X			X	
Massachusetts Turnpike Authority, MA	X				
Blue Water Bridge, MI	X			X	
Mackinac Bridge, MI				X	
Garden State Parkway, NJ	X		X		
Newark International Airport, NJ	X				
New Jersey Turnpike, NJ	X		X		
Bayonne Bridge, NY	X			X	
George Washington Bridge Expressway, NY	X				
George Washington Bridge Lower Level, NY	X				
George Washington Bridge Upper Level, NY	X			X	
Goethals Bridge, NY	X			X	
Holland Tunnel, NY	X				

Table 3.4(C). (continued)

	Amount and Type	Origin and/or Destination	Route	Schedule	Manifest
Kennedy International Airport, NY	X				
La Guardia Airport, NY	X				
Lincoln Tunnel, NY	X				
New York Thruway, NY	X				
Ogdensburg Bridge, NY	X				
Outerbridge Crossing, NY	X			X	
Thousand Islands Bridge, NY	X				
Throgs Neck Bridge, NY	X			X	
Verrazano-Narrows Bridge Upper Level, NY	X			X	
Pennsylvania Turnpike, PA	X		X		
Baytown-La Porte Tunnel, TX	X			X	
Washburn Tunnel, TX	X			X	
Chesapeake Bay Bridge and Tunnel, VA	X				
TOTAL	30	0	3	15	0

3.9 PARTIES INVOLVED

Table 2.1 lists the parties that submit and receive the notifications for shipments of hazardous and radioactive materials. In 103 cases, the carrier is asked to submit the notification, compared to 50 cases for the shipper and 13 cases for the receiver. These add up to more than 136 cases because some laws allow any one of the parties to provide the notification. One law calls upon the Governor of New York to provide the notification.

The notifications are received by a wide variety of agencies. Most state laws require the notice to go to either a transportation department or an environmental protection agency. Localities generally direct notifications to the police department or the executive. Facilities invariably receive the notifications themselves.

3.10 DEGREE OF ENFORCEMENT

Very little information is available to quantify compliance with notification requirements. Informal conversations suggest that state and local officials generally believe that shippers and transporters comply with the requirements, but these beliefs seem to be largely impressionistic. Most officials had very little information about the frequency of shipments in their area. New Jersey state officials observed that notification was usually received for shipments, but often on the day of shipment rather than the required seven days in advance. The state did not interfere with these shipments, however. Similarly, officials at several facilities noted that trucks often arrive without notifying in advance to obtain an escort. The facilities usually try to arrange an escort immediately in such situations, although repeated violations by the same carrier tend to diminish such cooperation.

Several states do employ methods to check compliance. Mississippi checks compliance with notification statutes by informing weigh stations of scheduled shipments; unannounced loads can then be identified when they weigh. Nevada uses periodic spot checks to encourage compliance. Florida checks with disposal facilities to identify carriers who have failed to

comply with requirements. Enforcement measures of these types are much less common among localities.

One reason for the lack of information regarding compliance and enforcement is that notification requirements seem to be very low priorities for most organizations. The agencies charged with collecting these data usually have many other missions that they regard as more important, and hence little attention is paid to implementing or enforcing notification laws. In fact, several local agencies were unaware of the notification laws they were supposed to enforce, even though the laws are still in effect. One police department insisted that they had no such law and that the citation must apply to a city with the same name in another state. One city clerk's office indicated that the city had no prenotification law, but when a follow-up call was made two months later the same office provided a copy of such a law that had been adopted several years before and was still in force. When initially contacted, several other localities believed they had notification laws, only to discover that they could not find any when the local codes were consulted.

Carriers have mixed beliefs about the degree of enforcement of notification requirements. Some carriers felt that all notification laws were carefully enforced, while other carriers believed that most laws were unenforced. There was general consensus that a few well-known laws were routinely enforced.

Overall, enforcement of notification laws seems to vary widely. Some laws are carefully monitored by individuals responsible for enforcement, and seem to receive almost universal compliance. Other laws seem to be unknown and unenforced. Still other laws have never been tested in practice since the commodities they cover have never been shipped through the jurisdictions involved.

3.11 IMPLEMENTATION COSTS

Several states noted that notification requirements had added to their costs. No agency could provide a precise financial estimate, but most cited additional personnel as the major expenditure. The more comprehensive state notification systems, such as those that are used to

track shipments of hazardous waste, have required 3 to 5 additional employees. The other major cost that was identified was for data processing.

Most local agencies and facilities indicated that implementation costs were minimal. Notification requirements have not imposed needs for additional manpower or resources. This conclusion is not surprising given the very limited use of data by most local agencies. Facilities already had personnel in place to collect tolls or regulate traffic, and so have encountered few additional expenses.

3.12 CARRIER AND SHIPPER IMPACTS

The impact of state and local notification requirements falls principally upon carriers of radioactive and other hazardous materials. Some notification requirements do apply to shippers, particularly those that involve hazardous waste or large quantity radioactive material shipments. For example, shippers of hazardous waste may be required to provide copies of the manifest that has been prepared. Also, local governments sometimes require either shippers or carriers of spent nuclear fuel to provide notification. However, for the most part the state and local notification requirements affect carriers more than any other industry group. Since most notification requirements apply to highway shipments, it is the motor carrier industry in particular that bears the primary burden.

The assistance of the American Trucking Associations, Inc. (ATA) was solicited to help identify specific impacts on motor carriers arising from notification requirements. The approach used to solicit input from ATA and some of its members involved three steps. First, ATA was asked to provide an overall policy position on the issue of state and local notification requirements. Second, ATA was asked to help solicit input from the members of its Hazardous Material Committee through a questionnaire. Third, individual carriers were contacted separately for additional detail on internal company procedures and costs arising from complying with notification rules.

The motor carrier industry's position on the issue of hazardous material shipment prenotification has been expressed by ATA on numerous occasions. As a general policy, the ATA opposes state and local prenotification requirements, and believes such requirements are burdensome and adversely affect safe transportation of hazardous materials. The ATA would support notification to states for infrequent shipments of extremely hazardous materials, such as is provided by the existing NRC prenotification system.

In order to obtain more detail on the nature of the burdens created by notification requirements on motor carrier operations, a questionnaire was prepared and distributed to the Hazardous Material (HM) Committee of ATA. This committee is composed of representatives of 30 companies that transport hazardous materials. The questionnaires solicited carrier input in four general areas: identification of notification requirements, compliance with such requirements, burdens imposed by the requirements, and enforcement activities by states and localities. Nine of 30 (30 percent) ATA HM Committee members completed and returned the questionnaire. The percentage of hazardous material traffic to total traffic ranged between 2 percent and 18 percent for these nine large carriers.

Compliance with state and local notification rules was generally considered burdensome by individual carriers based upon the responses to the questionnaire. Also, additional costs are created for carriers that comply with such laws. Much of the added cost involves staff time to keep apprised of state and local regulatory activities and to prepare the actual notifications. One carrier estimated that up to 2 man-hours per week are dedicated solely to notification-related activities. Another carrier indicated that its annual cost of compliance is approximately $10,000. All respondents reported that at least one individual in its company is responsible for notification compliance. This individual is usually at the general office and has other responsibilities as well. Other individuals at terminals may also get involved to provide local notifications. The sources of notification information for carriers are primarily state trucking associations and government agencies.

Only three of the nine responding carriers believed that state and local notification requirements are enforced very carefully. Three carriers believed that such rules are enforced only "moderately" or very little while three carriers expressed no opinion. Finally, carriers were asked to identify information collection requirements and their opinion on the least burdensome method of collecting hazardous material shipment data. Carriers responded that some state and local governments require the submission of annual reports, copies of shipping papers, and license applications to collect information. Of these collection mechanisms, carriers favored either the submission of annual reports (four of nine responses) or copies of shipping papers (three of nine responses) as less burdensome than prenotification.

In addition to the ATA questionnaire, three carriers were contacted individually to gain further insights into the impact on internal company procedures. The three carriers were selected to represent different components of the industry: a major carrier of radioactive material, a major tank truck carrier, and a major package freight carrier. The manner in which these carriers ensure compliance with state and local notification generally fall into two procedural categories.

In the first category, all notification responsibilities are centralized in one office at the company headquarters. From one to three individuals in this office are responsible for all state and local information collection requirements in addition to other duties. The individuals keep apprised of state and local regulatory activity by subscribing to transportation newsletters and by state trucking association contacts. If something new is in a newsletter, one of these individuals checks for further details with the government agency involved. Periodic checks with this agency are maintained thereafter. One company has established its own internal data base of state and local requirements.

The actual notification process is started when the carrier receives an order to move a hazardous material through a jurisdiction that is known to require notification. This information is passed to the central office

which then makes the notification required. Neither the terminals nor the drivers need become involved.

The second procedure to ensure compliance is more decentralized. The central office may coordinate notification-related activities of district offices or terminals. In some cases, the destination terminal is responsible for notifying its local jurisdiction if appropriate. In other cases, the last terminal before entry into a jurisdiction requiring notification is responsible.

Several general conclusions can be made based upon the ATA position, the ATA HM Committee questionnaire, and discussions on internal notification procedures with individual carriers. First, state and local notification requirements do not seem to be presently burdensome to the motor carrier industry as a whole. It is apparent from the low (30%) response rate to the questionnaire and from the lack of detail in returned questionnaires that relatively few carriers now face great difficulty. However, it is clear from the ATA position and from individual discussions with carriers that the primary concern is fear of proliferation of notification requirements, given the large number of jurisdictions in the U.S.

The second conclusion that can be made is that widespread notification requirements can be very costly. The types of cost that are incurred to comply with notification rules can be categorized as follows based upon carrier discussions:

1. Cost of "awareness" - labor cost involved with keeping up with various state and local statutes and regulations and ensuring that such information is disseminated to appropriate staff in the company.

2. Procedural costs - labor cost involved in making the actual notification, including communication costs. This cost can vary substantially depending on the internal company procedures, the number of notifications per shipment, and the amount of information required in the notification.

3. Operational costs - shipment delays to ensure notification and possible circuitous routing to avoid jurisdictions that require notification.

The above costs do illustrate that widespread state and local notification requirements have the potential to become quite burdensome on the motor carrier industry.

4.0 CASE STUDY OF NRC NOTIFICATION SYSTEM FOR SPENT NUCLEAR FUEL AND NUCLEAR WASTE

4.1 INTRODUCTION

The purpose of this case study is to examine a federally prescribed shipment notification system that applies to spent nuclear fuel and nuclear waste. This standardized system of state-level notification is administered by the U.S. Nuclear Regulatory Commission (NRC) and has been in operation since July 1982.

The general approach used in this chapter is to describe the system established by the NRC, review shipment data, survey state implementation activities, and draw conclusions on how the system is working. This chapter begins by providing the background on the statute and regulations applicable to NRC notifications for both spent fuel and nuclear waste. It then describes the shipment data base that is available for analysis. The results of a survey of selected states on their implementation of notification procedures and the use of notification information are then presented, followed by a summary of the findings and conclusions of the NRC case study.

4.2 NRC NOTIFICATION REQUIREMENTS FOR NUCLEAR WASTE AND SPENT NUCLEAR FUEL

Background

The NRC has required its licensees to provide advance notice for certain nuclear shipments for some time. Advance notice requirements are incorporated into NRC's rules covering physical protection. It is helpful to briefly review these provisions to set the context of the more recent state-level notification system that is the subject of this case analysis.

NRC licensees are required to provide physical protection of special nuclear material (SNM) to prevent theft, diversion, or sabotage. These rules are contained in 10 CFR Part 73 and include both fixed sites and materials in transit. The rules apply to "formula" quantities of SNM, which includes 5,000 grams or more of uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium in a single shipment. Of particular interest is Section 73.72,

titled "Requirement for advance notice of shipment of special nuclear material." This rule requires the licensee to notify the NRC Regional Office of Inspection and Enforcement of impending SNM shipments. Notification must be by mail, postmarked at least 7 days before departure. The licensee must identify the shipper, carrier, and receiver of the material as well as the date and time of departure and arrival. The licensee is also required to telephone the NRC Regional Office 7 days in advance of the shipment and inform them that a notification has been mailed. This federal-level notification procedure has been in effect since 1975.

In 1979 the NRC extended its physical protection requirements to also include spent nuclear fuel (SNF) in transit. One provision of these new rules was a requirement that licensees provide advance notice of spent nuclear fuel shipments to the NRC in the same manner as that required for SNM.[21] Thus, the NRC simply extended its initial notification requirements in Section 73.72 to SNF.

NRC Authorization Act of 1980

Congress directed the NRC to expand its shipment notification procedures to include state governments in 1980. Congress included the following provision as part of its authorizing legislation for the NRC:

> The Nuclear Regulatory Commission, within 90 days of enactment of this Act, shall promulgate regulations providing for timely notification to the Governor of any State prior to the transport of nuclear waste, including spent nuclear fuel, to, through, or across the boundaries of such State. Such notification requirements shall not apply to nuclear waste in such quantities and of such types as the Commission specifically determines do not pose a potentially significant hazard to the health and safety of the public.[22]

Congress did not provide specific guidelines as to the type of notification that would be appropriate. It left to the NRC the task of determining the quantity and type of radioactive material that should be subject to state notification, as well as the type of information and timing of notification that would be adequate.

The NRC issued a Notice of Proposed Rulemaking (NPRM) in December 1980 in which it set out its proposed scheme of notification.[23] The Commission decided to impose two types of notification procedures: one for nuclear waste and the other for spent nuclear fuel. Final rules were issued by the NRC in January 1982.[24] The Commission amended 10 CFR Part 71 to include prenotification for certain quantities of nuclear waste and amended 10 CFR Part 73 for spent nuclear fuel. Both Part 71 and Part 73 procedures are outlined below.

Part 71 Notifications for Nuclear Waste

Procedures for supplying advance notice to the states for nuclear waste are contained in 10 CFR Part 71. There are three major characteristics of these notification requirements: definition of material, timing of notification, and information required. These are described below.

Nuclear waste is defined as: (a) any quantity of source, byproduct, or special nuclear material required by 10 CFR Part 71 to be in Type B packaging while being transported to, through, or across state boundaries to a disposal site; or (b) irradiated fuel in a quantity less than that requiring compliance with provisions of 10 CFR Part 73 concerning physical security in transit (usually 100 grams or less) but large enough to be required by 10 CFR Part 71 to be shipped in Type B packaging while being transported to, through, or across state boundaries irrespective of destination.

Notification for a shipment of nuclear waste may be either mailed or delivered to designated state officials and to the appropriate NRC regional office. A notification that is mailed must be postmarked at least seven days before the first day of the seven day period during which the shipment is scheduled to depart from the point of origin. A notification that is delivered must reach the office of the appropriate state official and the appropriate NRC regional office at least four days before the first day of the seven day period during which the shipment is scheduled to depart from the point of origin.

Four basic types of information are required as part of the notification system for nuclear waste. First, the parties involved must be identified by specifying the name, address, and telephone number of the shipper, the receiver, the carrier, and an individual who can provide current information concerning the shipment. Second, the notification must provide a description of the shipment as required by the Department of Transportation (DOT) in 49 CFR 172.202 and 172.203(d). Third, information about the shipment's schedule must be provided, including the address of the point of origin, the seven-day period during which the shipment will commence, the seven-day period during which the shipment will first enter the state, the seven-day period during which the shipment is scheduled to arrive at its destination, and the address of the destination. Finally, in the event that the shipment schedule changes from that provided in the written advance notification, or in the event of a shipment cancellation, a responsible person in each state affected by the schedule change or cancellation is to be telephoned and informed of the new schedule. A responsible person is one who agrees to convey the new schedule information to the official designated to receive notifications of shipments of nuclear waste. Additionally, in the event of a shipment cancellation, a written notice of cancellation is to be sent to each official who has been provided with an advance notification. A copy of a notice of cancellation is also mailed to the appropriate NRC regional office. Schedule changes need not be telephoned or otherwise be reported to the regional office.

Part 73 Notifications for Spent Nuclear Fuel

Procedures for supplying advance notice to the states for spent nuclear fuel are contained the NRC's physical protection rules in 10 CFR Part 73. This part of the code was used because the notifications include schedule information that must be protected from unauthorized disclosure. As in Part 71, there are three major characteristics of the notification procedure: definition of material, timing of notification, and information required.

Spent fuel comprises irradiated reactor fuel in excess of 100 grams net weight (exclusive of cladding or other structural or packaging

material) that has a total external radiation does rate in excess of 100 rems per hour at a distance of three feet from any accessible surface without intervening shielding.

A notification for a shipment of spent fuel may be either mailed or delivered to designated state officials. A notification that is mailed must be postmarked at least seven days before the date that spent fuel is scheduled to be transported in the state. A notification that is delivered must reach the office of the state official at least four days before the shipment is scheduled to be transported in the state. With respect to filing dates for notifications to the NRC, the requirements of Section 73.37(b)(1) and Section 73.72 continue in force. No new requirements have been added.

Six categories of information are required as part of the notification system for spent nuclear fuel. First, the parties involved must be identified by specifying the name, address, and telephone number of the shipper, carrier, and receiver. Second, a description of the shipment must be provided as required by the DOT in 49 CFR 172.202 and 172.203(d). Third, the notification must specify the route to be used within each state and the address of the point of origin. Fourth, the schedule of the shipment must be provided on a separate sheet, which is to be protected against unauthorized disclosure. This schedule must include the date and time (within a tolerance of six hours) that the shipment is (1) first scheduled to be transported in the state, and (2) scheduled to depart from the point of origin. Fifth, the notification must indicate that schedule information is attached as a separate item and that this information must be protected against unauthorized disclosure until a specified date. For an individual shipment that date is to be ten days after the shipment is scheduled to reach its destination. For a shipment that is a component in a series of shipments, that date is ten days after the last shipment is scheduled to arrive at its destination. Finally, in the event that a shipment schedule changes from that provided in the written advance notification, a responsible person in the office of the listed official is to be contacted by telephone and informed of the schedule change; however, the date and time of a shipment is information

that must be protected against unauthorized disclosure. Since specific schedules cannot be discussed over a nonsecure telephone, the change should be reported in terms of the number of hours of advance or delay relative to the schedule provided in the written advance notification. Cancellation of a spent fuel shipment can be made by nonsecure telephone to each state affected. No written notice of cancellation of a shipment of spent fuel needs to be made to the state.

Generic Features of the NRC Notification System

The NRC is the only Federal agency that has established standards for shipment notification to states for hazardous materials. In doing so, the NRC faced the basic decisions of what the system should entail: the type and quantity of material to be covered, the timing of the notification, and the type of information to be provided. These and other questions concerning the general makeup of a federal-state notification system are reviewed below.

The NRC emphasized in both the NPRM and the Final Rule that regulations were being adopted as mandated by P.L. 96-295. The purpose for the rule was identified in NRC's guidance document for licensees:

> The purpose of the rule is to provide the states with information not otherwise available to them, which will enable them to contribute to the safety, security, and ease of transport of the shipments.[25]

The purpose did not explicitly specify the need to improve emergency preparedness and response, compliance, or security.

In P.L. 96-295, Congress required notification for spent nuclear fuel. For other types of nuclear waste, the type and quantity to be subject to notification was not clear. Congress did provide a general standard for making this determination by dictating that notification should not apply to "such quantities and such types as the Commission specifically determines do not pose a potentially significant hazard to the health and safety of the public."[26] In its NPRM, the NRC addressed the "potentially significant hazard" standard by looking at existing packaging requirements. "Considering the types and quantities of materials shipped in Type A and Type B packages, it seems reasonable to

conclude that quantities of radioactive waste required to be in a Type A package do not pose a potentially significant hazard to the public health and safety."[27] Thus, notification was initially proposed for Type B packages (and therefore Type B quantities of waste) since Type A packages had been ruled out. The NRC estimated that as many as 24,000 Type B packages could be subject to notification annually by 1985.

The NRC narrowed the definition of nuclear waste considerably in its final rules. The Commission withdrew its proposal to include all Type B packages in notification procedures for two reasons. First, the NRC was apparently concerned that this cutoff would imply that a "potentially significant hazard" existed for Type B packages in transportation. Second, the NRC was concerned with the administrative burden of notification on states and shippers because of the large number of shipments.

The Commission, in deciding upon a cutoff point for materials subject to notification, first noted that Congress specifically required notification for spent fuel. Since spent fuel is almost always transported as a Large Quantity shipment, the NRC reasoned that Congress also meant to include an equivalent standard for other nuclear waste. NRC finally decided to require notification only for Large Quantity (now called Highway Route Controlled Quantity) shipments of nuclear waste, believing this to be consistent with Congressional intent for spent fuel shipments. Thus, the decision as to the type and quantity of material included in the NRC notification system was based largely on an interpretation of Congressional intent and the packaging scheme for radioactive materials already in place.

The NRC requires that notifications by mail be postmarked at least seven days in advance or delivered by messenger at least four days in advance. Evidently the seven day postmark requirement was based on the requirements for special nuclear material that had been in existence since 1975. No rationale was provided for the seven days.

The NRC did discuss the four day requirement in its final rule. It was stated that this time period was a "reasonable compromise" considering the needs for timeliness, necessity of schedule updates, and information

protection for spent fuel.[28] The NRC did not go into any details as to nature of the compromise. One possibility is that it takes about three days on the average for a mailed notification to arrive at its destination. Consequently, the effective notice lead time would be four days whether sent by mail or delivered by messenger. The exact significance of the four day time period, however, was not discussed.

The type of information to be supplied in the advance notice is less subject to judgment than decisions involving type and quantity of material and notification times. Certain information is necessary if a notification is to have any value. This includes the identification of parties involved in the shipment, a detailed description of the shipment, and the routes to be used.

Shipment schedule information, however, is a key consideration for a notification system and was the subject of some debate by the NRC. Schedule requirements under Part 71 procedures involve a "seven-day window" feature. The lead times for the advance notice are based on the beginning of a seven day period. Once this period is identified, the carrier has a "seven-day window" during which the shipment can depart without any further schedule updates. The state is also apprised of a "seven-day window" for arrival at the state boundary. Under this arrangement, a state only knows that the shipment will be passing over certain routes within the state during a seven-day period. If the state desires more current schedule information it can telephone the point of contact provided by the licensee. The advantage of this type of schedule notification is flexibility for the shipper and carrier. It also allows the state the opportunity to obtain more detail on shipment schedules without a great deal of paperwork by the shipper or carrier.

Schedule requirements for spent fuel include the exact times of shipment with a tolerance of plus or minus six hours. If the carrier is off schedule, he is required to telephone applicable states with updated information. The NRC stated the six-hour tolerance was a compromise between carrier flexibility and the need for "schedule accuracy in order to assure that states have the opportunity to contribute to the security and safety of transport of shipments."[29]

One important aspect of a state notification system imposed at the federal level is federal oversight of state activities, such as requiring that notification information be used in particular ways by the states. The NRC received comments that notifications should be required to be passed on by the state governors or their designees to emergency response units or to local officials throughout the state. The NRC declined to do so. Aside from legal questions, the NRC noted that differences in state organizations would make this difficult.

The NRC stated it did not object to subsequent notification by a state to local officials, except for the classified schedule information for spent fuel. In a related amendment to 10 CFR 73.21(c), the NRC balanced the need to protect safeguards information with the need to provide responsible local officials with prior notice by specifically authorizing advance schedule information to be passed on to members of a local law enforcement authority that is responsible for responding to requests for assistance during safeguards emergencies.

One alternative to shipment-by-shipment notification is generic notification. This entails providing general information to states concerning routine shipments over commonly used routes. The NRC was urged by some groups to adopt a less burdensome generic notification procedure to fulfill the Congressional mandate of P.L. 96-295. The Commission rejected this proposal, noting that states would have a greater range of alternatives if shipment-specific notifications were provided.

4.3 SHIPMENT DATA BASE

There is no centralized data base available on the number of notifications by NRC licensees. Licensees are required only to provide notification to the states and to the appropriate regional NRC office, and there is no requirement that these notifications be retained for any length of time. However, information can be extracted from two data bases kept by federal agencies in Washington that provide a close approximation of licensee shipping activity subject to notification since the rule went into effect in July 1982.

The first source of information involves the NRC's safeguard program for shipping spent nuclear fuel. Licensees are required to obtain route approval from the NRC prior to shipping SNF. Thus, the NRC's Office of Nuclear Materials Safety and Safeguards (NMSS) has detailed information on such shipments because of its security rules. Declassified shipment schedules for 1982-84 were obtained from NMSS and served as the primary source of shipment data for this case analysis. The NRC does not have similar security provisions for nuclear waste subject to Part 71 notification. Therefore, shipment data is not available from the NRC for non-spent fuel shipments.

The NRC information was cross-checked with the radioactive material routing data base maintained by the DOT. Shippers of Large Quantity radioactive materials (now called Highway Route Controlled Quantity or HRCQ) are required by 49 CFR 173.22(c)(1) to submit a copy of the carrier route plan to the DOT within 90 days after the shipment. The DOT has established an automated data base with this information. Since spent nuclear fuel shipments are always HRCQ, this data base should provide accurate information on such shipments and should match the NRC data base. Nuclear waste shipments under Part 71 notification requirements are usually shipped HRCQ as well. However, it is difficult to be certain that shipments listed in the DOT data base are nuclear waste as defined by NRC because of differing descriptions used in the DOT data base.

The NRC and the DOT data bases on shipments of SNF subject to Part 73 notifications are consistent with only a few exceptions. As stated above, nuclear waste shipments subject to Part 71 notifications were not in the NRC data base and were very difficult to identify in the DOT data base. As a result, most of the remainder of this case study focuses upon SNF shipments only. Each data base on SNF was reviewed from July 6, 1982 (the effective date of the NRC rules) to April 1, 1984, a period of 20 months. It is important to note that the following discussion assumes that state notifications were actually made for each shipment or shipment series that was reported to the NRC and the DOT. Also, the figures presented below do not include shipments of SNF by U.S. Department of Energy (DOE) contractors since they are not subject to NRC licensing requirements.

Finally, these figures do not include shipments that are part of a shipping campaign currently underway at the time of this report. Examples of such shipping campaigns are the West Valley shipments from New York to Wisconsin and Illinois, and the shipments by General Electric from Illinois to Wisconsin.

As shown in Table 4.1, there have been 134 shipments of spent nuclear fuel by NRC licensees over the 20-month period since notification has been required, an average of about seven per month. Thus, although the NRC notification rule has been in effect for close to two years, the total shipping experience is relatively small. In addition, the number of actual notifications is much less than might be expected, even given the small number of shipments. This is because most of the 134 shipments were part of shipping campaigns consisting of a series of shipments over a specified time, using the same route, and through the same states. The NRC requires that only one notification be made to each state for the entire shipment series, with coded schedule updates as necessary.

Two types of shipping campaigns actually account for 80% of all SNF shipments in this data base. The first type is the removal of spent fuel assemblies from commercial power reactors and shipment to the DOE's reprocessing facility in Idaho Falls, Idaho. This includes 36 shipments from the Ft. St. Vrain reactor in Platteville, Colorado and 14 shipments from the General Electric Vallecitos reactor in Pleasanton, California. These two series alone account for 37% of SNF shipments in the data base. The second type of series shipments includes import shipments of SNF from foreign reactors destined for DOE reprocessing at Idaho Falls, Idaho or Aiken, South Carolina. These include 25 shipments from Portsmouth, Virginia to Idaho Falls and another 10 from Portsmouth to Aiken. There were also 14 shipments to Idaho Falls via the port of Portland, Oregon. Finally, eight shipments of SNF entered the U.S. from Canada via Derby Line, Vermont on the way to South Carolina. Altogether, there were 57 import shipments that accounted for 42.5% of all SNF shipments in the notification data base under analysis.

Table 4.1. Spent Nuclear Fuel Shipments Subject to NRC Part 73 Prenotification
7/6/82 - 4/1/84

Shipments	Total Number of Shipments	Number of Shipment Series	States Traversed	Number of States Receiving Notification For Each Series	Total Number of Notifications
Platteville, CO - Idaho Falls, ID	36	1	CO, WY, UT, ID	4	4
Portsmouth, VA - Idaho Falls, ID	25	17	VA, WV, MD, PA, OH, IN, IL, IA, NE, WY, UT, ID	12	204
Pleasanton, CA - Idaho Falls, ID	18	1	CA, NV, ID	3	3
Portland, OR - Idaho Falls, ID	14	4	OR, ID	2	8
Portsmouth, VA - Aiken, SC	10	10	VA, NC, SC	3	30
Derby Line, VT - Aiken, SC	8	1	VT, MA, CT, NY, PA, MD, WV, VA, NC, SC	10	10
Columbia, MO - Idaho Falls, ID	5	2	MO, IA, NE, WY, UT, ID	6	12
Ft. Calhoun, NE - W. Jefferson, OH	1	1	NE, IA, IL, IN, OH	5	5
Tuxedo, NY - Idaho Falls, ID	2	2	NY, PA, OH, IN, IL, IA, NE, WY, UT, ID	10	20
Zion, IL - W. Jefferson, OH	2	2	IL, IN, OH	3	6
Pleasanton, CA - Richmond, CA	2	2	CA	1	2
Lusby, MD - W. Jefferson, OH	1	1	MD, VA, WV, OH	4	4
Pembina, ND - Idaho Falls, ID	1	1	ND, MT, ID	3	3
Millstone, CT - Pleasanton, CA	1	1	CT, NY, PA, OH, IN, IL, IA, NE, WY, UT, NV, CA	12	12
Monticello, MN - Pleasanton, CA	1	1	MN, ND, MT, ID, NV, CA	6	6
Monticello, MN - W. Jefferson, OH	1	1	MN, IA, IL, IN, OH	5	5
Gravel Neck, VA - W. Jefferson, OH	1	1	VA, MD, WV, OH	4	4
Cordova, IL - Pleasanton, CA	1	1	IL, IA, NE, WY, UT, NV, CA	7	7
W. Jefferson, OH - Zion, IL	1	1	OH, IN, IL	3	3
Lynchburg, VA - Seneca, SC	1	1	VA, NC, SC	3	3
Seneca, SC - Lynchburg, VA	1	1	SC, NC, VA	3	3
Pleasanton, CA - Richmond, CA	1	1	CA	1	1
TOTALS	134	54			355

Source: U.S. DOT and U.S. NRC Data Bases

The remaining shipments include 18 individual shipments (not involving a shipment series) from and to various points, and 5 shipments from the University of Missouri in Columbia, Missouri to Idaho Falls, Idaho.

The third column of Table 4.1 lists the number of shipment series (or shipping campaigns) for each origin-destination. These numbers are broken out of the total number of shipments in the second column since they represent the number of actual notifications that were required over the 20-month period of study. These numbers are best estimates based upon the DOT and the NRC data bases since the exact number of shipment series is not kept on file by either the DOT or the NRC. The remainder of Table 4.1 pertains to the number of state notifications.

The DOT data base lists the state routes identified on carrier route plans for each shipment of SNF by an NRC licensee. Thus, the states that should have received Part 73 notifications could be extracted and are shown in Column 4 of Table 4.1. The total number of states receiving Part 73 notification for each shipment or shipment series is then shown in Column 5. Finally, Column 6 shows the total number of notifications by shipment and shipment series (Column 3 multiplied by Column 5). The total number of notifications for the 134 SNF shipments over the 20-month period is shown at the bottom of Column 6. Thus, the total experience with the Federal-state level notification system represented by this case study is 355 Part 73 notifications.

Table 4.2 breaks down the 355 notifications by state and lists the states receiving the most notifications in descending order. A total of 26 states have received Part 73 notifications. Table 4.2 serves to illustrate the distinction between states with the most shipments and states that have received the most notifications. This is important for this case study since the focus is on the states with the most experience in receiving and processing the Part 73 notifications. The first 15 states listed in Table 4.2 have received 93% of the Part 73 notifications that should have been made for the sample data base under consideration. This is not surprising since these states are the locations of major nuclear facilities or include major transportation routes for radioactive

Table 4.2 SNF Notifications and SNF Shipments by State (7/6/82 - 4/1/84)

	State	Number of Notifications	Number of Shipments
1.	Virginia	32	47
2.	Idaho	29	102
3.	Ohio	27	35
4.	Illinois	26	34
5.	Indiana	25	33
6.	Iowa	25	36
7.	Nebraska	24	35
8.	Wyoming	24	70
9.	Utah	24	70
10.	Pennsylvania	21	36
11.	Maryland	20	35
12.	West Virginia	20	35
13.	South Carolina	13	20
14.	North Carolina	13	20
15.	California	7	24
16.	Oregon	4	14
17.	Nevada	4	21
18.	New York	4	11
19.	Connecticut	2	9
20.	Missouri	2	5
21.	Minnesota	2	2
22.	North Dakota	2	2
23.	Montana	2	2
24.	Vermont	1	8
25.	Massachusetts	1	8
26.	Colorado	1	36

Source: U.S. DOT and U.S. NRC Data Bases

materials. Consequently, this analysis will concentrate on these 15 states and their experience in receiving prior notification for spent nuclear fuel.

4.4 STATE IMPLEMENTATION OF NOTIFICATION PROCEDURES

This section describes the manner in which states have implemented procedures to receive and process Part 73 notifications from NRC licensees. The focus is on the 15 states that have the most experience in receiving notifications. First, however, it is instructive to note how the states as a group have incorporated this function into the state organization.

State Agencies Designated by Governor to Receive Notifications

Initially, there was some reluctance by some states to request notifications because of the burden of maintaining confidentiality of shipment schedules. To avoid confusion, the NRC required their licensees to notify all fifty state governors. The states were then left to use the information as they deemed appropriate. A list of the governors' designees to receive the notifications was published on June 7, 1982.[30] The mix of agencies designated to receive the notifications illustrates to some extent the different manner in which the states view the nature and importance of prior shipment information.

As shown in Table 4.3, 18 of 50 governors designated the agency responsible for radiological health. Another 12 states have notifications received by agencies involved with generic emergency response and preparedness. Thus, 30 out of 50 states have designated agencies with substantial emergency response duties, since radiological health agencies often have the lead state role for radiological emergencies. This is an indication that these states as a group see one of the primary benefits of shipment notifications as related to emergency planning and response.

Eight state governors designated enforcement agencies to receive notifications. Three states have an environmental regulatory agency receive the advance shipment information and two states give the

Table 4.3. State Agencies with Responsibility for Receiving NRC Part 73 Notifications

Type of Agency	Number With Designee	States
Radiological Health	18	AZ, AR, FL, ID, KY, MA, MT, NV, NY, NJ, NM, ND, SC, TN, TX, UT, VT, WY
Emergency Response (such as Disaster Services)	12	IA, KS, MN, MS, MO, NY, OH, PA, SD, VA, WV, WI
Enforcement (such as State Policy or Highway Patrol	8	CA, CO, IN, LA, MD, MI, NE, NC
Environment	3	AK, CT, ME
Transportation	2	DE, GA
Other (such as Safety, Nuclear Safety, Energy, Public Utilities)	7	AL, HI, IL, OK, OR, RI, WA

responsibility to the general transportation agency. The other seven states are represented by a variety of agencies with different responsibilities.

Survey of State Notification Procedures

As identified in Section 4.3, 15 states have received 93% of the Part 73 notifications considered in the case study. Each of these 15 states was contacted to determine how they have implemented internal procedures to utilize the notifications. The survey involved contacting the agency in each state designated by the governor for receiving Part 73 notifications. Each agency representative (who in most cases was the actual governor's designee) was then questioned in seven subject areas. The first four areas of questioning were strictly factual and the last

three involved opinions on the part of the agency designee. The seven areas of questioning include the following:

1) Administrative Handling. The agency contact was asked to describe the internal processing of a notification from the time it is received to the point of subsequent notifications, if any. The type of data base or files maintained by the agency and whether the accumulated data was used or analyzed in any manner were also of interest.

2) Further Notifications. The agency contact was asked to identify the parties to whom subsequent notification is sent within each state.

3) Method of Communication. The contact was questioned on the method used to communicate further notifications within the state.

4) Specific Action. The agency contact was asked to identify specific actions taken by any state agency (action other than filing or subsequent notification) based on the notification.

5) Primary Benefits. Each contact was asked to identify the primary benefits, if any, of having prior shipment knowledge at the state level.

6) Problems Experienced with the NRC System. Each contact was also asked to identify the problems associated with the system of prenotification established by the NRC, such as adequacy of information, timing of notification, operational problems, or administrative burdens created.

7) Accomplishing Useful Purpose. Finally, each contact was questioned on whether he or she believed that the NRC prenotification arrangement was accomplishing a useful purpose. Additional comments on any aspect of the state experience handling Part 73 notifications were also encouraged.

Analysis of State Survey

This section summarizes and evaluates the responses of state agencies on implementation of NRC notification procedures. The results of the survey are presented in Table 4.4. Each of the major headings shown on Table 4.4 will be addressed in order.

Table 4.4. Summary of Responses of State Survey on NRC Notifications

State/Agency	Administrative Handling	Further Notifications	Method of Communication	Specific Action	Benefits Identified By State	Problems Identified By State	Useful Purpose In Opinion of State Contact
California Highway Patrol (CHP)	Manual Filing	1. CHP Division Offices 2. City Police Chiefs along route 3. Certain local fire-chiefs	Law Enforcement Computer System	None	Awareness for public responsiveness	Schedule updates	Yes
Idaho Radiation Control Section (RCS)	Manual Filing	None	N/A	None	State-level emergency response	Not universally applied Administrative burden	Doubtful
Illinois Department of Nuclear Safety (DNS)	Manual Filing Annual Report to Gov.	1. State Disaster Services Agency 2. State Police 3. County Sheriffs	Hand-carried	1. Inspection of each shipment 2. Escorts	1. Scheduling inspections and escorts 2. Awareness	7-day notification period	Yes
Indiana State Police (ISP)	Manual Filing Annual Report to Gov.	1. Govenor's Office 2. State Civil Defense 3. Board of Health 4. County Sheriffs	Law Enforcement Computer System	None	None Identified	None	Marginal
Iowa Office of Disaster Services (ODS)	Manual Filing	1. Health Department 2. Transportation Dept. 3. Office of Water, Air, & Waste Management 4. Governor's Office 5. Univ. of Iowa Hygienics Lab 6. Univ. of Iowa Rad Protection Unit 7. Highway Patrol 8. Iowa State Univ. Nuclear Engr. Lab 9. For certain rail shipments-to County Board of Supervisors	Mail	None	1. Public responsiveness or awareness 2. Compliance checks	Schedule updates	Yes
Maryland State Police (MSP)	Manual Filing Quarterly Summary to Board of Health	1. State Police installation commanders	Secure teletype system	None	1. Emergency response	None	Yes

Source: Battelle Survey

Table 4.4. (continued)

State/Agency	Administrative Handling	Further Notifications	Method of Communication	Specific Action	Benefits Identified By State	Problems Identified By State	Useful Purpose In Opinion of State Contact
Nebraska State Patrol (NSP)	Manual Filing	1. State Patrol Troop Area Captains in Omaha and Lincoln 2. State Patrol Division Offices along route	Centrex-Nebraska secure WATS line	Escorts around Omaha and Lincoln	1. Awareness 2. Escorts	Schedule updates	No
North Carolina Highway Patrol	Manual Filing	1. Highway Patrol Troop Offices and Substations 2. Highway Patrol Communication Center 3. State Radiological Protection Branch	Mail Law Enforcement Computer System	None	1. Shipment awareness 2. Security	None	Yes
Ohio Disaster Services Agency (DSA)	Manual Filing	1. State Highway Patrol Offices 2. County Sheriffs	Law Enforcement Computer System (LECS)-secure on-line with terminals at most LLEA's	None (except inspection and escorts for West Valley shipments)	1. Awareness 2. State-level ER 3. Selective enforcement efforts	None	Yes
Pennsylvania Emergency Management Agency (PEMA)	Manual Filing Monthly Summary	1. State Bureau of Rad Protection 2. State Police 3. "Occasionally" County Emergency Coordinators	Mail	None	1. Emergency response 2. Security 3. Public Acceptance	None	Yes
South Carolina Bureau of Radiological Health (BHR)	Manual Filing Daily Summaries	None	N/A	Occasional check on routes	1. Emergency response 2. Public responsiveness and awareness 3. Selective enforcement	Not universally applied Need standard format 7-day period too long	Yes
Utah Bureau of Radiation Control (BRC)	Temporary Filing	1. State Emergency Management Agency 2. State Highway Patrol	Telephone	Occasional escort	Awareness and responsiveness to public, media, governor, and legislators	Frequent schedule updates	Yes

Source: Battelle Survey

Table 4.4. (continued)

State/Agency	Administrative Handling	Further Notifications	Method of Communication	Specific Action	Benefits Identified By State	Problems Identified By State	Useful Purpose In Opinion of State Contact
Virginia Office of Emergency Energy Services (OEES)	Manual Filing	1. State Police Division HQ along route 2. County Sheriffs 3. Municipal police departments 4. State Rad Health Bureau (phone)	Virginia Criminal Investigation Network (VCIN)-discrete teletype message service with terminals at most LLEA's	None	1. Awareness 2. State-level emergency response (ER)	Not universally applied	Yes
West Virginia State Police (WVSP)	Manual Filing	1. State Police Company Commanders 2. State Office of Emergency Services 3. State Fire Commissioner	Mail	None	1. Shipment awareness 2. Emergency response	None	Yes
Wyoming Radiological Health Service (RHS)	Manual Filing	1. State Patrol HQ	Hand-carried	None	1. Emergency response 2. Awareness	Schedule updates	Yes

Source: Battelle Survey

Administrative handling includes the responses to questions concerning internal handling procedures, type of data base maintained, and use of data. Fourteen of the 15 states surveyed maintain all notifications on file. One state, Utah, destroys the notifications ten days after shipments have been completed. All 14 of the states keeping notifications on file do so manually, although several reported they have computer capability if the number of shipments increases substantially. Five of the states prepare periodic shipment summaries for the governor's office or other state agencies.

Five of the states surveyed indicate that they pass on the notification information to various other state agencies, but do not notify local officials. The number of state agencies notified in each state varied from one in Wyoming to eight in Iowa. Two other states make subsequent notification only to other elements of the same agency that received the notification. These are the Nebraska State Patrol and the Maryland State Police that pass on shipment information only to their subdivisions along the route of travel.

Six of the 15 states make subsequent notifications to the local level as well as to other state agencies. The local notifications included four to county sheriffs, two to municipal police departments, and one each to local fire chiefs and county emergency coordinators along the route of travel. It is presumed that classified schedule information was deleted from the local notifications to non-enforcement agencies in accordance with the NRC rules.

Two of the 15 states make no further notifications after receiving the initial notice. Interestingly, this included the two states that were the destination of most of the shipments--Idaho and South Carolina. The information contained in the notifications was merely retained by these state radiological health agencies for internal use.

The reason most often given for the nine states not passing on Part 73 notifications to the local level, even when requested by local officials, was security control. States maintained that protection of classified schedule information would be very difficult to ensure. However, most of these states also indicated that Part 71 notifications

were not passed on either, even though not subject to protection requirements. One state official expressed the concern, which may be representative of other states, that widespread local notifications would be a severe administrative burden on the state agency.

The method of communicating subsequent notifications by state agencies varied from being hand carried to being computerized. Three states mailed subsequent notification information, two used the telephone, two employed a secure teletype system, three used a dedicated law enforcement computer system, and two delivered subsequent notifications by hand. One state used both the mail and a computer system. None of the states considered communicating notification information to be administratively burdensome.

States were questioned on specific actions that are taken based upon receiving Part 73 shipment information before transportation actually occurs. Only five states reported taking any action other than making subsequent notifications. Illinois uses the advance notice to plan state inspections and escorts for the shipments. Nebraska also provides escorts for spent fuel shipments around the cities of Lincoln and Omaha. Three other states reported only that advance information is occasionally used for specific actions. Utah reported that an occasional escort is employed, South Carolina uses notification to plan an occasional compliance check on routes used by carriers, and Ohio uses the information to arrange inspections and escorts for West Valley shipments.

State officials were asked to express their opinion of the primary benefits from receiving advance notice of spent fuel shipments. Table 4.5 presents a matrix of the responses. Once again, it is important to note that these responses are the opinion only of the person in each state responsible for administering or implementing the state notification procedure. Some officials gave more than one response and these are shown in the order expressed in the table.

As the table illustrates, "shipment awareness" was identified by 12 of the 15 states as the first or second choice of the primary benefit. Shipment awareness includes the benefit of having knowledge that a shipment is taking place so the agency can respond to questions from the

Table 4.5. Benefits of Notification Identified by State Officials

Benefit	1st Choice	2nd Choice	3rd Choice
Shipment Awareness	8	4	0
Emergency Response	5	2	0
Enforcement	1	1	2
Security	0	2	0
Escorts	0	1	0
None	1	0	0

public, media, and political leaders within the state. A number of states expressed the belief that public acceptability within the state was actually enhanced by the perception that someone at the state level had a "handle on things."

Emergency preparedness and response was the next most identified benefit of having prior shipment knowledge. Reasons given by state contacts to support this belief included the ability to keep key emergency officials on alert during shipments, the importance of having an adequate time frame for shipment-specific planning efforts, and the advantage of having specific shipment information on file in case of an emergency during which shipping papers or other shipment information are not available.

Other secondary benefits identified by state contacts included enforcement (such as inspections or route compliance), security, and ability to plan for escorts by the state. One state did not identify any benefits for advance notification.

State contacts were asked to identify any problems with specifics of the NRC system of notification, including the type of information required or the adequacy of timing. Generally, very few problems were identified by the states. The most common problem identified was the administrative burden created by continual shipment schedule updates. This was mentioned by five states. Schedule updates are often required for a shipment series

since only one initial notification is required and the entire series may last as long as several months.

Three states felt that spent fuel notification requirements are not universally applied. This had to do with the fact that DOE contractor shipments are not subject to NRC's notification rules. The result is some confusion among the states over which shipments require notification. Two states mentioned that the seven-day postmark requirement does not allow sufficient time for planning even if notification is received the required four days before shipment departure.

State officials were asked their opinion, based upon their experience in administering the state notification system, of whether the advance shipment information under the NRC system served any useful purpose. Twelve of the 15 states felt that the information was valuable and served a useful purpose for the state. The other three either said that no real purpose was being served or that notification information was of marginal benefit. Again, these responses reflect the state officials' opinions of whether the notification was useful for state purposes, not whether the NRC system was accomplishing the purpose intended by Congress.

4.5 CONCLUSION

The NRC has required Federal level shipment notification for special nuclear material since 1975 and spent nuclear fuel since 1979. This was expanded to state-level notification for nuclear waste and spent fuel in 1982, as mandated by Congress. Neither Congress nor the NRC clearly articulated the purpose to be served by this system except to transfer shipment information to the states for whatever action the states believed was necessary.

The shipment experience for NRC Part 73 notifications during the first 20 months is relatively limited, but probably enough to provide a good picture of how the states are implementing notification procedures. Based upon a telephone survey of the 15 states receiving almost all of the notifications during this period, states are generally in favor of receiving advance notice and are experiencing few administrative problems. This is partly due to the small number of shipments and to the

fact that most states are making subsequent notifications only to other state agencies and not to the local level. Only a few states are actually using the advance shipment information to take specific actions such as to make inspections or to provide escorts. For the most part, the uses of the initial state notification are subsequent notifications to other state agencies and an occasional summary report of shipments.

The primary benefits of notification identified by almost all of the states surveyed were shipment awareness and emergency response. It was clear from the survey that the states believed that just being knowledgeable about the shipments was very important, enough to justify the system by itself. There was much less enthusiasm on this viewpoint when the state officials were asked about similar benefits for general hazardous material shipments.

Although not considered to be integral to this study of state implementation, several of the primary NRC licensees that have made shipments during the study period were contacted to obtain a sense of the burden created by Part 73 notifications. Each responded that the state notification procedure, as presently established under the NRC framework, does not create a substantial burden by itself. (However, it was pointed out that when notification is added to various other requirements such as routing approvals, permits, time restrictions on scheduling, and so on, the entire shipping process is becoming very difficult.) The burden on licensees strictly from notification is limited greatly by the fact that a high percentage of shipments are part of a shipping campaign between the same points, thus necessitating only one notification to each of the states involved.

In conclusion, the NRC notification system seems to be working well overall without creating undue burden on either the states or NRC licensees. This situation could change if the number of spent fuel and nuclear waste shipments involving multiple origins and destinations were to increase substantially in the future.

5.0 CASE STUDIES OF STATE AND LOCAL NOTIFICATION LAWS

This chapter explores fourteen state and local notification requirements in more detail. These case studies were selected to cover a range of organizations, purposes, and commodities. Several unique or particularly interesting cases were examined, meaning that these case studies should not be thought of as typical or average examples of notification requirements. Rather, they should be considered as representative examples of the various possible notification systems. The first five case studies involve states, the following five examine localities, and the last four involve facilities.

Each case study is divided into nine sections. These sections outline the background and purpose of the law, describe its requirements, explain how it was implemented, discuss the degree to which it is enforced, outline how information obtained from the notifications is used, list the benefits perceived by the government, describe any costs incurred by the government, discuss impacts on carriers and shippers, and assess whether the notification requirement is achieving its stated purpose. The final section also includes a brief summary of the perceived costs and benefits of each law.

5.1 STATE NOTIFICATION LAWS

Notification laws in Arkansas, Florida, Georgia, Maine, and Massachusetts were chosen for additional study. The laws in Arkansas, Maine, and Massachusetts involve hazardous waste. The Florida law included here covers low-level radioactive waste. The Georgia statute and regulations that are described involve radioactive materials, liquefied natural gas (LNG), and polychlorinated biphenyls (PCBs).

Arkansas

Background and purpose. Arkansas adopted regulations governing the transportation of hazardous waste in response to the requirements of the federal Resource Conservation and Recovery Act.[31] The main purposes of the regulations are to protect public health and the environment.

Description of law. Regulations for the transportation of hazardous waste are included in the Arkansas Hazardous Waste Management Code, the most recent edition of which was issued on July 6, 1984. These regulations are based on the authority contained in the Arkansas Hazardous Waste Management Act of 1979.[32] A total of seven notification provisions are included in the code. The first is a prenotification requirement, the next five involve per trip reporting, and the last one requires a monthly report.

1) One day prenotification is required for shipments into or out of the state. The carrier, shipper, or receiver can provide the notification, which must include information about the amount and type of material, the origin, the destination, the carrier, and the schedule of shipments. Notification is required only for the first shipment of a series. Carriers with approved hazardous waste transportation plans are exempt from this regulation.[33]
2) The shipper must file a copy of the manifest within two days after the start of the trip.[34]
3) The shipper must also file a copy of the completed and signed manifest within 45 days after the start of the trip.[35]
4) A carrier or shipper delivering a load to a barge line or other water-borne carrier must file a copy of the manifest within two days of delivery.[36]
5) A carrier delivering a load outside of the U.S. that originated in Arkansas must file a copy of the signed manifest upon completion of the trip.[37]
6) If a shipment cannot be delivered to the receiver shown on the manifest, the shipper must file a revised manifest indicating the ultimate disposition of the material.[38]
7) Receivers must file a monthly report listing all manifests received in the preceeding month.[39]

Implementation. The U.S. Environmental Protection Agency (EPA) had contacted shippers, carriers, and receivers when it had implemented its regulations governing hazardous waste. The Arkansas Department of

Pollution Control and Ecology distributed its regulations to in-state firms that had responded to the EPA contacts.

Enforcement. Regulations for facilities are enforced by state inspectors, who frequently visit major shippers and receivers. Smaller operators are inspected less often. No special enforcement programs for carriers were identified.

Use of information. Notifications are used to track the flows of hazardous waste into and out of the state. Manifests and information from advance notifications and monthly reports are matched and combined to ensure that shipments are moved as scheduled and are delivered only to approved treatment, storage, or disposal facilities. Summary reports of major commodities and carriers are produced to facilitate internal planning and to prevent unauthorized disposal.

Perceived benefits. Department officials believe the notification information is useful for two purposes. First, it allows them to minimize illegal disposal of hazardous waste since shipments can be tracked from generator to receiver. Second, the Department can identify major carriers of these materials and can target inspections and training programs toward them.

Estimated costs. There are some costs involved in collecting, processing, and storing the information obtained through notifications. However, no numerical cost estimates were available from Department officials.

Carrier or shipper impacts. The major requirement imposed on shippers and carriers is to file manifests in compliance with the regulations. This requires some paperwork and staff time. Receivers are required to submit monthly summaries of manifests, which also requires personnel. Relatively few parties are affected by the prenotification regulation, so impacts related to advance planning and equipment scheduling difficulties are uncommon.

Assessment. Arkansas's system for tracking hazardous waste seems to be successful in achieving its goals. Department officials compile and use information about shipments. The paperwork requirements imposed on

shippers, carriers, and receivers do not seem particularly burdensome. It is not clear, however, why the prenotification provision has been included along with the requirements for manifest filings and monthly reporting. No clear rationale for the prenotification system was identified, and experience with the prenotification system is insufficient to allow firm conclusions about its usefulness to be drawn.

Florida

Background and purpose. The proposed Southeastern Compact for low-level radioactive waste requires that each state ensure that all shipments destined for disposal be properly packaged and shipped. Florida officials felt that the only way to do this was to create and implement their own notification and inspection system. This system was established in 1982.

Description of law. Florida's notification requirements for low-level radioactive waste are contained in Chapter 10D-63 of the Rules of the Department of Health and Rehabilitative Services (DHRS). This chapter covers transportation of radioactive materials. There are four separate notification provisions related to low-level radioactive waste. Two include prenotification and two involve reporting following each trip.

1) Shipments moved into or through the state require a permit. The permit application must be delivered by the carrier 2-30 days in advance of the shipment, and requires information about the type, quantity, and activity of the waste; the date and time of arrival; the estimated time the material will be in the state; and the proposed route.[40]
2) Shipments from shippers in Florida destined for a low-level waste treatment, storage, or disposal facility require notification at least two days in advance so an inspection of the vehicle and its cargo can be made. This notification must include information about the shipper, carrier, schedule, and route.[41]
3) Within three days following arrival at the destination, shippers of low-level waste must notify the DHRS of the arrival.[42]

4) Within two weeks following arrival at the destination, shippers of low-level waste must provide records of receipt and information concerning any violations of regulations to the DHRS.[43]

These regulations implement the provisions of Fla. Stat. Ann. Sec. 404.20. This chapter of the Administrative Code also includes a prenotification provision for shipments of radioactive waste in Type B packaging, which is not discussed here.

Implementation. The DHRS implemented the regulations through a three step process. First, they contacted all treatment and disposal facilities handling low-level waste to get the names of transporters. Second, they conducted a workshop with shippers and transporters to inform them of the regulations and obtain suggestions. Third, the regulations were circulated among interested parties to gain agreement and understanding about the provisions.

Enforcement. These regulations are actively enforced along two different dimensions. First, the state obtains lists of transporters from treatment and disposal facilities on an annual basis to identify transporters that have not provided notifications. One such firm was identified in 1983. Second, the notification and inspection system is used to enforce regulations on packaging and shipping. During the last two years, about a dozen shipments have been delayed following inspection in order to correct deficiencies. Broken packages seem to be the most common problem.

Use of information. Information from notifications, inspections, and bills of lading is entered into a computerized data base developed by EG&G Idaho. The data base is used to generate information for planning purposes. It is also used to send letters to shippers summarizing violations, and to provide monthly or quarterly reports to the state's nuclear utilities outlining recent shipments.

Approximately 160 shipments of low-level waste are made out of the state each year. The provisions for shipments into or through the state have never been used since no such shipments are currently made. If a

low-level waste disposal site is subsequently established in Florida, this regulation will come into effect.

Perceived benefits. State officials described three major benefits from the notification and inspection system. First, it has improved the public's perception of the safety of shipping radioactive waste since shipments are inspected and made with the knowledge of the state government. Second, public health and safety have been enhanced since shipments that do not meet standards are identified by the inspections. Third, the data base offers long-range planning opportunities, according to state officials. They intend to eventually identify different types of waste streams and use the information to improve transportation, treatment, and disposal policies.

Estimated costs. Although no precise cost estimates are available, the major costs of Florida's notification system are for personnel and for establishing the computerized data base. Two inspectors, a data entry operator, and a secretary are required to run the program. Half of the data entry operator's salary is covered by the Southern States Energy Board. All other costs are paid by the state.

Carrier or shipper impacts. Florida's regulations have noticeable impacts on carriers and shippers. Shipments must be planned in advance so inspections can be requested. Some paperwork is needed in order to get permits and supply records of receipt. These requirements, while time-consuming, do not seem to significantly disrupt schedules for shipments. State officials indicated that the inspection system had increased safety awareness among carriers.

Assessment. Florida's system for notification and inspection of low-level radioactive waste shipments originating in the state seems to be working very well. As intended, the system has improved safety by detecting improper packaging and handling, and has achieved a high degree of compliance. The information that is collected is processed and used for a variety of purposes, including planning and public awareness. State officials reported that they have received inquiries from groups considering using the Florida system as a model for activities elsewhere. Unlike the requirements for shipments originating in Florida, the permit

requirements for shipments into or through the state cannot be evaluated since no notifications have ever been received.

Georgia

Background and purpose. In the late 1970's, the frequency of trucking accidents on Georgia highways led to proposals for improved safety measures. Particular concern was focused on hazardous materials, perhaps because of an accident involving PCBs in the northern part of the state. These safety concerns led to the passage of the Transportation of Hazardous Materials Act in 1979, and the subsequent promulgation of rules by the Highway Traffic and Safety Division of the State Department of Transportation.

Description of law. Georgia's regulations requiring notification for hazardous material shipments fall into two categories depending on the commodities involved. These two sets of requirements implement the provisions of the Transportation of Hazardous Material Act, although the distinction between commodities was not included in that law.[44]

Shipments of LNG, PCBs, and certain radioactive materials, including spent fuel, materials transported on an exclusive use vehicle, those having a Transportation Index in excess of 50, and Large Quantity materials, require prenotification and postnotification. The carrier must call the DOT's Emergency Operations Center before starting a trip from within Georgia or before entering the state with an interstate shipment. The carrier must report the amount and type of material, the origin and destination, the route, and the carrier's permit number. Once the movement is completed within the state or the truck leaves the state, the carrier must again contact the Emergency Operations Center.[45]

Shipments of radioactive materials that do not fall into any of the categories listed above must comply with annual reporting requirements instead of prenotification. An annual letter of intent must be filed at the start of the year estimating the number of trips to be made and the amount and type of material to be transported.[46] Within 30 days after the expiration of a carrier's annual letter of intent, another report must

be filed outlining the actual number of trips made and the amount and type of material transported on each trip.[47]

Implementation. The Georgia DOT maintains a listing of all carriers known to be operating in the state, and descriptions of the new regulations were mailed to all of those firms. The existing Emergency Operations Center was given responsibility for receiving notifications from carriers. When the Center receives a notification from a carrier, it issues an authorization code for that trip.

Enforcement. Three mechanisms exist to enforce different portions of the regulations. First, officials at weigh stations check shipments whose placards or bills of lading indicate that they are transporting commodities requiring prenotification to see if the carrier has received the proper authorization code from the Emergency Operations Center. Second, police officials make a similar check when investigating accidents. Third, the Emergency Operations Center calls the carrier that provided advance notification of a shipment if the postnotification has not been received within an hour of the estimated time of completion of the movement. Usually, the carrier has forgotten to call once the move is finished, but occasionally the carrier is not aware of the disposition of the shipment and an investigation is started.

Use of information. The information received through prenotification is used to make sure shipments are moved as scheduled and to dispatch search teams to track down missing loads. The information from notifications and annual reports is kept on file for planning purposes. To date, no published summaries have been made because of manpower shortages.

Perceived benefits. Although the regulations have not decreased the number of accidents, they have increased carriers' awareness of safety and have helped to keep track of shipments. State officials also felt the information was of value since it allows them to develop better understandings of the commodities being shipped and the routes being used.

Estimated costs. Costs have been minimal. Some extra time is required to process reports, but no new personnel have been hired. The

Emergency Operations Center already existed and did not need to be expanded to handle notifications.

Carrier or shipper impacts. The prenotification requirements do not seem to be particularly burdensome for carriers in this case. No advance planning or scheduling is required. Relatively few shipments are covered by the prenotification provisions, and compliance seems to be good even though carriers occasionally forget to call once the movement is completed. Some carriers have complained that they often cannot get through to the Emergency Operations Center to provide the required notifications. The annual reporting requirements involve considerable paperwork for many carriers, and some have complained that the report requiring estimates of future waste shipments is particularly difficult to prepare.

Assessment. It is not clear what were the precise purposes of Georgia's regulations. The best information on the subject was obtained from a public relations official in the Georgia DOT, and he was not sure what the regulations were supposed to achieve beyond a general objective of increasing highway safety. This makes an assessment of their success difficult. State officials are convinced that the information available at the Emergency Operations Center helps them respond more rapidly and completely to accidents involving hazardous materials, although of course the information has not decreased the number of accidents. The information obtained through annual reports is useful for planning purposes, although this value may have been decreased somewhat by budgeting constraints. Burdens on carriers mostly involve additional paperwork.

Georgia's regulations represent a unique blend of prenotification for commodities perceived to be especially hazardous and annual reports for other commodities felt to be less hazardous. This approach may be one way of balancing states' desires for information with the burden imposed on carriers and shippers who must meet such requests. It is not yet clear whether the information that is obtained will significantly improve planning activities.

Maine

Background and purpose. In 1980, Maine adopted regulations that set up a comprehensive system of notifications for shipments of hazardous waste. No specific incidents spurred the adoption of these regulations. Instead, there were general concerns about the safety of shipments of such waste, particularly since a 1979 survey had revealed that significant quantities of waste were shipped in the state. The regulations were designed to identify the materials that were being shipped, ensure safe operations, and prevent unauthorized disposal.

Description of law. Maine's hazardous waste regulations include five separate notification provisions. Four of the five involve per trip reporting, while the other is a prenotification requirement that applies only to shipments being exported.

1) The shipper must send a copy of the manifest to the Maine Department of Environmental Protection within two days following the departure of the shipment. Only shipments within or out of the state are covered.[48]
2) The receiver must send a copy of the manifest to the Department within two days following the arrival of the shipment. Only shipments into or within the state are covered.[49]
3) A carrier transferring a load to another carrier must send a copy of the manifest to the Department within two days following the transfer.[50]
4) A shipper intending to send hazardous waste to another country must provide notification to the Department two weeks in advance. The notification must list the amount and type of the material, identify the receiving facility, and show that the facility is authorized to accept the waste.[51]
5) A carrier transferring waste from Maine to another country must send a copy of the manifest to the Department within two days of departure from the U.S.[52]

Implementation. The Department contacted all major generators and transporters of hazardous waste to inform them of the new regulations. A

four month grace period was allowed for transporters to obtain the necessary permits and forms.

Enforcement. Regulations to ensure the safe transportation of hazardous waste are enforced in two ways. First, periodic inspections of transporters are scheduled to check on compliance with safety standards. Second, state policemen at weigh stations inspect vehicles and check manifests. This enforcement mechanism is limited by the relatively few policemen who are available. Compliance with the notification regulations seems to be very good.

Use of information. Department officials use the manifests to identify major types of waste shipments and to track shipments in the state. Manifests provided by carriers, shippers, and receivers are compared to make sure they match.

Perceived benefits. State officials identified two major benefits of the regulations. First, they know who the major carriers of hazardous waste are and what types of commodities are transported. Second, safety has been enhanced since inspections are more common and more information is available about the disposition of hazardous waste.

Estimated costs. Three new employees were added to collect, process, and analyze the manifests and license applications. No cost estimate for the program was readily available.

Carrier or shipper impacts. Carriers were required to obtain permits and in some cases to upgrade equipment. The reporting system requires additional paperwork, although the filing of manifests does not seem to be particularly burdensome. Some shippers seem to be pleased to have licensed transporters since it gives them greater assurance of safe performance.

Assessment. Maine's regulations for transporting hazardous wastes seem to be functioning quite well. Information is being collected and used to improve safety and planning. Adverse impacts seem relatively minor.

Massachusetts

Background and purpose. Massachusetts has one of the nation's most comprehensive sets of regulations governing the transportation of hazardous waste. Hazardous waste regulations were first adopted in 1973. Originally, the only requirement was for monthly reports by carriers. These regulations have evolved considerably over the last decade. This evolution has been a response to general concerns about the safety of shipping hazardous waste, rather than as a result of specific transportation incidents. Large active environmental groups, many of which are linked to the state's universities, have provided some of the driving force behind the changes in the regulations.

The regulations requiring notifications for shipments of hazardous waste are part of a more general system regulating the treatment and disposal of these commodities. The overall purpose of these regulations is to ensure the safe handling and disposition of hazardous waste at all times.

Description of law. Massachusetts has six separate notification regulations that apply to shipments of hazardous waste. The first three involve per trip reporting, the fourth requires prenotification, and the final two require periodic reports.

1) Within ten days following the departure of a shipment, the shipper must file a copy of the manifest with the Massachusetts Department of Environmental Quality Engineering.[53]
2) Once the shipment is delivered, the receiving facility must file a copy of the completed manifest with the Department.[54]
3) If the waste is generated outside of Massachusetts, a Massachusetts receiving facility must also file a copy of the completed manifest with the appropriate agency in the state of origin.[55]
4) Shippers of hazardous waste from Massachusetts to a foreign country must inform the Department four weeks before the first shipment to that country in that year. Information about the amount and type of material, the destination, and the receiver is required.[56]

5) Shippers must submit annual reports to the Department by March 1 of the subsequent year. These reports must describe all waste transported from the site and must list all carriers that were used.[57]

6) Carriers must submit monthly reports to the Department listing the amount and type of material transported on each trip, plus the origin, destination, shipper, and receiver of each load.[58] This requirement applies to shipments into, out of, within, or through the state.

Implementation. Hazardous waste regulations in Massachusetts have been evolving for the last decade. During this time, Department officials have gradually gathered information through inspections and contacts with receivers to help them identify shippers and carriers of such materials. Changes in requirements are simply distributed to these firms. One continuing problem is that Massachusetts has somewhat different regulations than those of the EPA, which has generated some confusion for carriers and shippers. The state has applied for authorization to control those activities as a way to resolve this conflict.

Enforcement. Massachusetts uses three different approaches to ensure compliance with notification laws. One approach involves matching manifests submitted by shippers and receivers to identify discrepancies. All manifests are entered into a computer, which notes any mismatches. Differences between manifests or missing manifests are investigated immediately. The second approach involves periodic inspections of receiving facilities to ensure compliance with regulations. The final approach is to investigate transportation accidents. These investigations occasionally identify loads that have not been manifested or carriers that are not complying with reporting requirements.

Use of information. Information gathered through notification requirements is used in a variety of ways. As noted earlier, manifests provided by receiving facilities are matched with those provided by generators to make sure shipments are delivered as planned. Annual reports submitted by shippers are matched with the computerized record of their manifests. Discrepancies are checked by one of the Department's

four regional offices. Annual reports by the Department are also distributed to local health agencies and emergency response groups in order to facilitate planning and coordination.

The monthly reports submitted by carriers have not been fully utilized as yet. These reports are filed and occasionally referred to during compliance investigations. They are also computerized for matching with submittals by shippers, but this matching has not been done to date.

Perceived benefits. State officials are very pleased with the results of their notification system. The computerized matching of manifests and reports has been underway for a year, and helps to ensure safe transportation and disposal. The reporting system also provides information for planning and emergency response. State officials felt the regulations had received a positive response from industry by encouraging shippers and carriers to become more concerned with safety and environmental matters.

Estimated costs. The notification system requires six additional employees to process and follow up manifests and reports. The other major expense is for computer time, although this has been minimized by sharing a computer owned by another state agency.

Carrier or shipper impacts. The major burden on carriers and shippers has been additional paperwork, and the monthly and annual reports seem to require substantial time to prepare. There seem to be no significant difficulties in complying with the regulations. State officials report compliance to be excellent, and only one carrier lost its license in 1984 for violating state regulations.

Assessment. Massachusetts has one of the most complete systems of notifications for shipments of hazardous waste. The information obtained from manifests and reports is carefully cross-checked and is used for a variety of purposes. The system seems to have improved the safety of transporting such wastes and has decreased illegal disposal. The only apparent flaw is the under-utilization of the monthly reports by carriers, a problem that state officials intend to correct in coming years.

Summary of State Notification Laws

The state laws examined in these five case studies illustrate the wide range of approaches and commodities that are of interest to state officials. Prenotification, periodic reporting, and per trip reporting are all used, and are often used in combination. The states are concerned with many types of hazardous materials, including radioactive materials and hazardous wastes.

The information gathered by these laws seems to be used as intended in most cases. The results of the notifications are used to arrange inspections, track shipments, and obtain information for planning purposes. In general, these requirements do not seem to be extremely burdensome for carriers and shippers, although many of them impose additional paperwork requirements. However, this burden would be significantly increased if similar requirements were in effect in all fifty states.

5.2 LOCAL NOTIFICATION LAWS

Five local notifications laws were also chosen for additional study. These include laws in Lawrence, Kansas; Kenner, Louisiana; Missoula, Montana; Vestal, New York; and nine localities in Cuyahoga County, Ohio. These laws were selected to provide ranges of commodities and regulatory approaches. It should be noted that these laws are among the more well documented ones and hence were chosen for case studies. Several of the other local ordinances considered for case studies were rejected because officials could not supply information about implementation or impacts.

Lawrence, Kansas

Background and purpose. Lawrence, Kansas is located on Interstate 70, a major cross-country highway. Shipments of radioactive materials periodically are made along this route. A group of local residents became concerned about the plans that had been made to respond to transportation emergencies, and discovered that no information was collected by the city about the types of materials that were shipped or the schedules of such shipments.

The citizens' group initially called for a ban on shipments of radioactive materials, but decided this was impractical. A proposal was then made to require prenotification for such shipments, but this was eventually dropped since too many people needed to be notified. Instead, an ordinance adopted in January 1982 requires carriers of radioactive materials to submit monthly reports to the Fire Chief. This information was to be used to develop emergency response plans.

Description of law. Carriers of radioactive materials are required to submit monthly reports detailing the amount, type, and activity of the materials included in each shipment, along with the date, time, route, shipper, and receiver. Certain materials having low levels of radioactivity are exempt.[59]

Implementation. No special steps were taken to implement the law after it was approved.

Enforcement. No enforcement program was established to check on compliance with with law.

Use of information. The Fire Department has never received a monthly report from any carrier. The information is intended to be used for emergency planning, but the lack of reports has rendered such planning functions superfluous.

Perceived benefits. The advocates of the ordinance felt it would lead to the development of more realistic and comprehensive emergency response plans. Since no reports have been received, these plans have not been developed.

Estimated costs. The system is not expected to add to the city's expenses.

Carrier or shipper impacts. There have apparently been no impacts on shippers or carriers since no reports have been filed.

Assessment. Lawrence's ordinance is a unique example of monthly reporting of shipments to a local government. It allows information to be gathered to facilitate planning without burdening carriers with prenotification requirements. The lack of reports makes it impossible to

assess the actual usefulness of the information that might be collected. The absence of implementation and enforcement activities suggests that the ordinance may not have high priority for city officials.

Kenner, Louisiana

Background and purpose. Kenner is located just west of New Orleans astride several major highway and rail routes. According to local officials, truckers frequently parked rigs loaded with explosives in the city overnight, which led to concerns about possible explosions. In February 1984, ordinances were passed that required advance notification for shipments of explosives through Kenner.

Description of law. Kenner has two prenotification laws. The one that applies to trucks requires advance notification by the carrier before shipments of explosives enter the city. Such vehicles cannot be parked outdoors for more than one hour.[60] Rail shipments are covered by a separate ordinance. Such shipments cannot enter the city until notification is made, and cannot block a grade crossing for more than five minutes except in an emergency.[61] Notifications must be made to both the Police and Fire Departments. Each ordinance includes a variety of other provisions relating to speed, placarding, and liability.

Implementation. The Police and Fire Departments were given responsibility to implement the ordinances. Officials did not identify any special steps that were taken to inform carriers, although the ordinances were publicized in the New Orleans area and in trade journals.

Enforcement. The Police Department is responsible for enforcing the ordinances. Enforcement efforts have focused on trucks, since they were of the greatest original concern. The police investigate parked trucks, and occasionally stop trucks in transit. During June and July 1984, three shipments of explosives for which notification had not been provided were identified.

Use of information. The information received through notifications is designed to ensure that trucks pass through the city within one hour and that grade crossings are not blocked. City officials noted that a

truck can cross Kenner in seven minutes, so one hour should be more than adequate.

Perceived benefits. Local officials feel the ordinances increase safety by preventing shipments of explosives from being parked along city streets and highways.

Estimated costs. The ordinances have insignificant costs since notifications are made to existing departments. No personnel or facilities were added.

Carrier or shipper impacts. These ordinances require carriers to contact local officials in advance, although the adverse impact of this requirement is minimized by allowing notifications to be made immediately before entering the city. The one hour transit requirement and the grade crossing standard do not seem to have seriously disrupted commerce in the area.

Assessment. Kenner's prenotification ordinances have a special purpose. They essentially seek to limit the storage of explosives in unsecured areas by using prenotification to track shipments. The ordinances are not really aimed at restricting transportation. Prenotification provides a way for local officials to be aware of these shipments and to ensure that they exit the city within the allotted time. The laws seem to be actively enforced, and compliance seems to be good.

Missoula, Montana

Background and purpose. The city of Missoula, Montana adopted an ordinance restricting the transportation of radioactive materials on February 4, 1980.[62] This ordinance was a response to public concerns about radioactive materials in the city, and followed a 1978 initiative that had declared Missoula County to be a nuclear-free zone. The ordinance was intended to protect residents from radiation exposure from transportation accidents, and to protect property from radioactive contamination.

The original ordinance established two categories of radioactive materials: "small amounts," with aggregate activity of six curies or

less; and "larger than small amounts," with aggregate activity exceeding six curies. Small amounts could be transported without restriction, but larger amounts required an extraordinary permit that could only be issued following a public hearing.

On December 22, 1980, a revised ordinance was adopted that reclassified materials using existing federal definitions. "Small amounts" were redefined to correspond to Type A quantities as defined by the NRC. A new category called "intermediate amounts" was added, which matched Type B quantities as defined by the NRC. The final category covered "larger than intermediate amounts," which was the same as Large Quantities as defined by the NRC at that time. Small amounts can be transported without restriction, intermediate amounts require prenotification, and larger amounts still require an extraordinary permit.[63]

Description of law. Two different prenotification requirements are included in the Missoula ordinance. Type B materials (labeled "intermediate amounts" in the ordinance) require notice one day in advance. This notice must include information on the origin, destination, route, shipper, carrier, receiver, schedule, vehicle identification, and the amount, type, and activity of the material. Larger quantities of radioactive materials require an application for a special permit. This application serves as a prenotification requirement. The application must list the origin, destination, route, shipper, carrier, receiver, schedule, past safety records of the shipper and carrier, and the amount, type, and activity of the material. A public hearing must be held before the City Council decides whether to issue a permit.

Implementation. Missoula's ordinance has never been implemented. As soon as it was passed, Chem-Nuclear Systems, Inc. obtained an injunction against the enforcement of the law. Interstate 90 passes through the northern edge of Missoula, and Chem-Nuclear felt the ordinance would place a major burden on its activities. Chem-Nuclear's lawsuit seeking to have the ordinance ruled unconstitutional was upheld by the Federal District Court on October 9, 1984. The court's opinion noted that "the United States government has preempted the regulation of the transportation of

hazardous materials, and neither the State of Montana nor the City of Missoula has any power in this field.[64]

Enforcement. The ordinance was to be enforced by the Missoula Police, although they usually do not patrol the city's section of Interstate 90. The cooperation of the Montana Highway Patrol and the local weigh stations was sought, but these agencies refused to participate. Thus, substantial enforcement problems were anticipated.

Use of information. The city intended to use the information to facilitate emergency response planning. For shipments of intermediate amounts of radioactive materials, the Chief of Police was empowered to delay shipments if adverse highway or weather conditions existed. For larger quantities, the City Council could have changed routes and schedules, and could have required escorts.

Perceived benefits. The ordinance was believed by its proponents to be a way to enhance the safety of shipments and to minimize the transportation of radioactive materials through Missoula.

Estimated costs. Since the ordinance has not been implemented, there have been no costs to the city for its use. The legal bill has been substantial, however.

Carrier or shipper impacts. There have been no impacts on carriers or shippers because an injunction was in effect. If the injunction had been lifted, the law could have affected a wide range of shippers and carriers since Interstate 90 is a major transportation route for such materials. In particular, the requirement for a public hearing and a special permit would have required a great deal of advance planning and could have significantly delayed shipments.

Assessment. This ordinance was essentially a symbolic political response to widespread local concern about the use and transport of radioactive materials in Missoula. Officials admit that it would be difficult to enforce. If it had been approved, it could have created substantial problems for carriers, particularly those hauling Large Quantity materials that require a permit. Significant advance planning

would have been needed to comply with the requirements of a permit application and a public hearing.

Vestal, New York

Background and purpose. Vestal, New York does not have an ordinance requiring notification for shipments of hazardous materials. The town has, however, informally requested that it be notified in advance of shipments of nuclear waste. This request stems from a letter written to the Vestal Town Board in August 1983 by a citizen who had read a newspaper article about possible shipments by GPU Nuclear from West Valley, New York. These shipments might use State Route 17, which passes through the town. The Board agreed to request notification in advance of any shipments of radioactive waste through the town.

Description of law. The Town Board decided not to pass an ordinance requiring prenotification. During the Board's discussion of the letter, the Town Supervisor noted that the nearby city of Binghamton had passed such a law, but the Supervisor felt it was of questionable legality. He doubted that such an ordinance could be enforced. Instead, the Board directed him to contact GPU Nuclear and request advance notice of shipments. In the exchange of letters that followed, the Supervisor requested ten days prenotification of shipments.

Implementation. The request was implemented by writing to GPU Nuclear and asking for notification before shipments were made. GPU responded by saying that the destinations, routes, and schedules of shipments from West Valley had not yet been determined. They did agree to meet with the Town Board before shipments were made if the final plans meant the shipments would pass through Vestal. To date, Vestal has not received any notifications.

Enforcement. No steps were taken to enforce the request, and the Supervisor noted that even an ordinance probably would be unenforceable.

Use of information. No intended use of information was specified by the Town Board.

Perceived benefits. The benefits expected from the request for information were never specified. Since no notifications have been received, benefits cannot be determined.

Estimated costs. No significant costs have been incurred because of this request.

Carrier or shipper impacts. Since shipments have not gone through Vestal, there have been no impacts on carriers or shippers.

Assessment. Vestal's request is interesting for two reasons. First, it demonstrates the responsiveness of local elected officials to requests from their constituents. The Town Board made its request in response to a single letter from a resident. The Board never discussed what it would do if it received a notification, it simply decided the town should be aware of such shipments. Second, the Board's decision to informally request information rather than pass an ordinance represents a conservative action on the part of the local officials. The Board's discussion reflected both the probable legal barriers to such an ordinance and the difficulty of enforcing it. Such concerns are not often mentioned by local officials.

Ohio Towns

Background and purpose. In 1978 and 1979, nine towns in Cuyahoga County, Ohio, adopted ordinances requiring advance notification for shipments of radioactive materials. Most of these towns bordered on major transportation routes such as Interstate 90, Interstate 271, or the Ohio Turnpike (Interstate 80). These highways were used relatively often for shipments of radioactive materials from the East coast to the Midwest.

Local governments became concerned about their ability to respond to emergencies involving such shipments. The local chapter of the Sierra Club launched a campaign to increase public awareness of these shipments and the possible safety issues involved. Local concerns were further stimulated by a study sponsored jointly by the NRC and other agencies that concluded that primary responsibilities for response to transportation problems rested with local governments. Local officials believed, however, that they received inadequate information about shipments of

radioactive materials. The information provided to the towns by the State Patrol was felt to be insufficient and untimely.

Shaker Heights was the first community to adopt a prenotification regulation. It was quickly followed by eight other localities: Beachwood, Berea, Brooklyn, Euclid, Maple Heights, Mayfield Village, South Euclid, and Strongsville. Many of those ordinances are virtually identical. No formal network was set up to ensure this consistency, but informal communications were established through the Cuyahoga County Mayors and City Managers Association. This group serves as a forum for discussion among 60 municipalities in the area, and informs the communities of legislation that may be of interest to them. The similarity of many of the ordinances is due to the interactions through this group.

Description of law. The nine communities each have their own specific ordinances requiring notification for shipments of radioactive materials. All differ from one another in minor details, such as which local agency receives notifications. Despite these differences, there are remarkable similarities among the laws, which fall into three broad categories:

1) Seven of the communities use the same definition of radioactive materials and require two weeks written notification in advance. This notification must state the amount and type of material involved, plus the origin, destination, route, carrier, and schedule. This information is required as part of an application for a permit to transport the materials.[65]
2) Mayfield Village passed an ordinance similar to the other seven except that only 3 days notification is required.[66]
3) Strongsville's ordinance does not explicitly require prenotification. It does, however, require a permit for shipments of radioactive materials, and the application for this permit implicitly requires prenotification. The definition of radioactive materials is somewhat narrower than that used in the other eight ordinances. The carrier or shipper must provide information about the amount and type of material being shipped,

> the route, the schedule, and an explanation of the "urgent public policy" concern that necessitates the shipment. Medical and educational interests are automatically acceptable as urgent public policy concerns, but other interests must be explained and justified. All of the other communities except Euclid and Mayfield Village have similar requirements for a demonstration of urgent public policy concerns before a permit will be issued.[67]

Implementation. The towns sent copies of their ordinances to known shippers. Shippers and carriers resisted the ordinances, noting that it was difficult to keep track of whom to notify, that some of the provisions were hard to comply with, and that the laws were probably invalid anyway. Implementation within the communities was spotty; one police department charged with enforcing the ordinance did not know of its existence.

To date, none of the communities has received a notification or a permit application. For a time, shipments were rerouted to avoid Cuyahoga County. In 1983, a shipment by Continental Utility Company from West Valley, New York was scheduled to pass through the Cleveland area. The shipment was rerouted to avoid most of the communities with notification ordinances, but still followed the Ohio Turnpike through Berea and Strongsville. They filed suit to block the shipments, but the case was dismissed by the federal courts in the summer of 1984.

Enforcement. Enforcement of the ordinances has proved to be virtually impossible. Several local officials commented that they did not include enforcement provisions in the ordinances because they knew them to be unworkable. Other localities that considered adopting prenotification laws decided against them on the grounds they could not be enforced.

Use of information. The localities intended to use the information to evaluate permit applications, facilitate emergency response planning, and to provide escorts for shipments. Since no notifications were ever received, none of these activities have taken place.

Perceived benefits. The notifications were expected to facilitate planning and response to transportation emergencies. Their permit requirements, particularly as they related to "urgent public policy"

concerns, would have allowed the communities to reduce the number of shipments through their jurisdictions.

Estimated costs. Since there were no enforcement activities, costs were minimal. However, some litigation costs were incurred.

Carrier or shipper impacts. If they complied with the ordinances, carriers and shippers would have encountered a considerable amount of additional paperwork and planning. They stated that keeping track of the requirements was difficult and that each town required a separate notice since there was no cooperation or interaction among communities. These burdens were usually avoided by rerouting shipments, often resulting in longer routes and higher costs.

Assessment. The ordinances adopted by the nine Ohio towns were a response to local concerns about the safety of shipments of radioactive materials. They were scantily implemented and generally unenforced. These problems were recognized by officials in advance, suggesting that they hoped for voluntary compliance or that carriers would simply choose alternate routes that avoided the area. By and large, this latter hope has been realized, although the recent court decision may encourage shippers to begin to use routes through these localities. If actually followed, the ordinances would be very burdensome to shippers and carriers, particularly given the two week prenotification requirement in seven of the ordinances.

Summary of Local Notification Laws

The local notification laws included in the case studies generally share several basic characteristics. First, they are responses to local concerns about hazardous materials, particularly high-level radioactive materials. Second, implementation of the laws is limited because of lack of expertise or capabilities within local agencies. Third, enforcement is limited or non-existent. Thus, the benefits that were anticipated are not achieved, although the laws may have some deterrent effect and thus limit the number of shipments through a locality. Kenner, Louisiana is an exception to these general patterns, since its law was intended for a different purpose and seems to be actively enforced.

The impacts of those local laws on shippers and carriers are usually minor, although this is only because they are unknown and unenforced. However, some carriers have explicitly rerouted shipments to avoid local notification requirements such as were passed by the nine Ohio towns. This rerouting raised costs and probably increased transportation risks.

5.3 FACILITY NOTIFICATION LAWS

Four organizations operating transportation facilities were chosen as case studies for notification laws. The Maryland Transportation Authority and the Port Authority of New York and New Jersey operate bridges, tunnels, and highways, while the New Jersey Turnpike and Pennsylvania Turnpike are major highways. These case studies illustrate prenotification and per trip reporting for a variety of purposes.

Maryland Transportation Authority

Background and purpose. The Maryland Transportation Authority (MTA) operates six facilities in the state: the Baltimore Harbor Tunnel, the Francis Scott Key Bridge, the Harry W. Nice Memorial Bridge, the John F. Kennedy Memorial Highway, the Susquehanna River Bridge, and the William Preston Lane, Jr. Memorial Bridge. When the Baltimore Harbor Tunnel was opened in 1957, the MTA adopted regulations governing the transportation of hazardous materials through the tunnel. These regulations were subsequently broadened to cover the other toll facilities listed above. The regulations were designed to increase safety by controlling the types of commodities that could be carried and by providing escorts for shipments of hazardous materials. The MTA used the regulations of the Port Authority of New York and New Jersey as a model, although a few subsequent revisions have been made.

Description of law. The MTA requires one hour advance notification for shipments of Class A or B explosives (other than special fireworks) and for shipments of radioactive materials. Certain types of materials with limited radioactivity are exempt. This notice is to be phoned in by the carrier. The prenotification provisions apply only to the four bridges and the John F. Kennedy Memorial Highway. The Baltimore Harbor

Tunnel has no notification provisions since most hazardous materials are banned.[68]

Implementation. No special steps were taken to implement these regulations. Officials at toll plazas and entrance stations are responsible for these and other regulations.

Enforcement. MTA officials report few problems with compliance at the bridges. Random spot checks lead to occasional citations for violations. Officials noted that there was greater difficulty in enforcing the bans on shipments through the Baltimore Harbor Tunnel, and vehicles were frequently turned away or ticketed.

Use of information. The information received through notifications is used to arrange a police escort for the shipment. The information is then kept on file at each facility, although no subsequent uses were identified.

Perceived benefits. MTA officials believe the notification provisions have led to increased safety on the facilities since shipments of hazardous materials are kept away from other vehicles.

Estimated costs. The cost of enforcing the regulations is minimal. No additional personnel are required.

Carrier or shipper impacts. No significant impacts on shippers or carriers were identified.

Assessment. The MTA regulations are set up for the single purpose of providing escorts for shipments of explosives and radioactive materials. They seem to accomplish this purpose at minimal cost and with only a slight burden on commerce.

New Jersey Turnpike

Background and purpose. The prenotification regulations of the New Jersey Turnpike were established to enhance safety on this highway and to protect residents living near the Turnpike. Regulations governing radioactive materials were established in the mid-1970's. Coverage was

extended to explosives in 1983 in response to a very large shipment of explosives that was transported on the Turnpike.

Description of law. The regulations of the New Jersey Turnpike Authority require prior approval for shipments of radioactive materials or devices, and Class A, B, or C explosives. No definition of radioactive materials or devices is provided or referenced. Notification must be provided in advance in order to obtain approval. The Turnpike Authority prefers notification one month in advance, although many applications are processed more rapidly. The notification must include information about the type and quantity of material, the route, and the frequency of shipments.[69]

Implementation. No special steps were taken to implement the notification regulations. Responsibility for accepting notifications was assigned to an existing administrative unit.

Enforcement. The notification requirement is enforced by the State Police, who regularly patrol the Turnpike. Police officers routinely pull over placarded trucks to check on their cargoes, and may call the Turnpike Authority to see if permission was obtained. Many of the officers have received special training related to radioactive materials.

Use of information. Notifications have been used to restructure shipments, such as when one large load of explosives was divided into several small ones. Companies that systematically fail to notify or that provide inaccurate information are denied permits. No periodic reports or data analyses are prepared.

Perceived benefits. Turnpike officials believe this system allows them to be aware of potentially hazardous shipments being made on the highway. This information has allowed them to take measures intended to increase safety, such as the subdivision of shipments.

Estimated costs. Costs are minimal, since an administrative structure was already in place.

Carrier or shipper impacts. This regulation clearly could have major impacts on shippers and carriers, since it requires significant advance notice and can result in the restructuring of shipments. However, few

complaints seem to be made, probably because the availability of alternate routes allows carriers to reroute shipments to avoid the Turnpike.

Assessment. The Turnpike Authority has succeeded in meeting the goals originally identified for this regulation. Information provided on applications is carefully evaluated and used to influence decisions. Costs and adverse impacts seem to be minimal, although the lengthy prenotification requirement could seriously impede commerce if alternative routes were not available. Rerouting to avoid the Turnpike may increase costs or risks, but such assessments are beyond the scope of this study.

Port Authority of New York and New Jersey

Background and purpose. The Port Authority of New York and New Jersey has adopted a set of regulations governing the shipment of hazardous materials on the bridges, tunnels, and highways that are under the Authority's control. These regulations are intended to maximize the safety of transporting such materials, mainly by avoiding such movements during peak traffic hours and by providing escorts for shipments.

The Port Authority has always had regulations for the transportation of certain hazardous materials. These regulations were originally based on rules issued by the Interstate Commerce Commission. A major accident in the Holland Tunnel in 1949 lead to the adoption of stricter regulations, which have been modified occasionally since then. In particular, the number of commodities covered by the regulations has increased. Initially, only flammable liquids were included. Over the years, commodities such as explosives and radioactive materials have been added.

Description of law. The Port Authority has two separate prenotification regulations, each of which applies to four facilities. (There is also a prenotification regulation for the Authority's three airports, which is not discussed here.) The first regulation requires two hours advance notification for shipments of Class A or B explosives (except special fireworks), and most radioactive materials. Certain materials having limited radioactivity are excluded. This notification is provided by phone by the carrier. This regulation covers the Bayonne

Bridge, the Upper Level of the George Washington Bridge, the Goethals Bridge, and the Outerbridge Crossing.[70]

The second regulation requires advance notification by the carrier for shipments of non-liquid manufactured articles that contain radioactive materials as component parts. Materials with greater levels of radioactivity are banned. This regulation applies to the George Washington Bridge Expressway, the Lower Level of the George Washington Bridge, the Holland Tunnel, and the Lincoln Tunnel.[71]

Implementation. No special steps were taken when these laws were implemented. Officials at toll plazas were notified, and they in turn informed carriers.

Enforcement. The Port Authority generally relies on voluntary compliance with the regulations. Shipments for which notification has not been received are occasionally identified by Port Authority Police and are stopped. If an escort is available, these vehicles are usually allowed to proceed.

Use of information. Three uses are made of the information provided by advance notifications. First, officials at the facility notify the nearest Fire Department so that they can be ready to respond to emergencies. Second, the Port Authority Police provide an escort for the shipment. Third, shipments scheduled for peak traffic hours are sometimes postponed until less busy times. Records are kept of all notifications, but these files have not been systematically examined.

Perceived benefits. Port Authority officials believe the regulations have substantially increased safety. Shipments are scheduled to avoid rush hours, which lessens the risk of accidents. Escorts are provided to keep vehicles away from the hazardous cargo. The two hour notification allows the escorts to be ready when the truck arrives at the facility, thereby eliminating the need for the truck to stop on the shoulder to await escorts.

Estimated costs. No special programs or personnel are used to handle notifications, so costs are very small.

Carrier or shipper impacts. No significant adverse impacts on shippers or carriers were identified. Shipments for which notification has not been received are usually escorted promptly, although repeated failures to provide notice are punished.

Assessment. The Port Authority regulations seem to be well designed to enhance safe transportation of explosives and radioactive materials. These shipments are permitted on most of the bridges as long as an escort is arranged, and a two hour warning to obtain such an escort seems reasonable. Shipments of explosives, most radioactive materials, and many other hazardous materials are prohibited in the tunnels and confined bridges because of the the substantial consequences if an accident occurred. Rescheduling shipments to avoid congested periods also seems desirable. The Port Authority shows flexibility in accommodating carriers whenever possible; for example, shipments that arrive at a facility without the proper notification are escorted across immediately if escorts are available.

Pennsylvania Turnpike

Background and purpose. For many years, the Pennsylvania Turnpike Authority has required annual permits to transport hazardous materials on the Turnpike. In 1984, a requirement for reporting on each trip was instituted. This requirement is intended to provide information about the types and quantities of hazardous materials carried on the Turnpike.

Description of law. The new Turnpike regulations require each driver of a placarded shipment of hazardous materials to fill out a trip log. The logs include information about the amounts and types of materials carried, the route, the carrier, and the date. Drivers can obtain logs in advance or at the entrance station to the Turnpike. Logs must be turned in at exit stations.

Implementation. The Turnpike Commission notified carriers of the new requirements when they applied for permits. Logs were distributed to carriers and were also available at Turnpike entrance and exit stations.

Enforcement. The controlled exits from the Turnpike ensure compliance since drivers of placarded loads must turn in a trip log before proceeding. There have been no compliance problems; the only difficulty has been in explaining how to fill out the logs.

Use of information. The Turnpike Commission intends to use the information to develop a better understanding of the types and quantities of hazardous materials carried on the Turnpike. No specific analytical approaches have been agreed upon yet.

Perceived benefits. Officials hope the information will be of value in planning activities, and will help them in modifying permit requirements and emergency response procedures.

Estimated costs. The Commission will incur costs in distributing and processing the logs. Since they do not know how many logs they will receive, no cost estimate is yet available.

Carrier or shipper impacts. The only burden on carriers is to fill out the trip log. The form is relatively simple and thus should consume little time.

Assessment. The Turnpike's approach is an interesting way to obtain information since it ensures comprehensive coverage without requiring prenotification or lengthy reports. The method would not be universally applicable, however, since it depends upon the compliance that results from controlled exits.

Summary of Facility Notification Laws

Facilities employ notification requirements for a variety of purposes. Most use prenotification to arrange for escorts, and usually require very limited notice. Such requirements probably increase safety by warning other drivers of the load and by keeping other vehicles away from the shipment. Impacts on carriers seem to be minor, particularly since most facilities are flexible about the time required for notification.

Some facilities use prenotification or per trip reporting to obtain information for planning purposes. Compliance is ensured by controlled exits. Burdens on carriers again seem to be minor.

A few facilities, such as the New Jersey Turnpike, require prenotification for other purposes such as monitoring or emergency response. These regulations are potentially more burdensome, although their effect is limited by the availability of alternate routes.

6.0 FINDINGS

This chapter summarizes the findings of this report regarding state and local notification requirements. It is divided into four sections discussing the extent, purposes and uses, impacts, and context of these requirements.

6.1 EXTENT OF NOTIFICATION REQUIREMENTS

A total of 136 notification requirements were identified by this study. Of these, 62 were imposed by state governments, 42 by local governments, and 32 by facilities such as bridges, tunnels, airports, and turnpikes. Several dozen other requirements that had been identified by shippers, carriers, and previous studies were found to have been rescinded or to be non-existent.

Notification requirements can be subdivided into prenotification, periodic reporting, and per trip reporting. A total of 100 prenotification requirements were identified, compared to 14 requirements for periodic reporting and 22 requirements for per trip reporting. The mix of requirements varies considerably by level of government. State governments have many prenotification requirements, but also are the greatest users of reporting requirements. These reporting requirements stem largely from state concerns about shipments of hazardous wastes, which are commonly tracked by comparing manifests submitted by shippers, carriers, and receivers, or by matching manifests with annual reports. In contrast, local laws focus almost exclusively on prenotification. Likewise, almost all requirements imposed by facilities require prenotification, especially since such information is often used to arrange escorts for shipments.

6.2 PURPOSES AND USES OF NOTIFICATION REQUIREMENTS

A wide variety of purposes for notification requirements are identified by statutes and regulations, and others are mentioned by government officials. In general, these fall into seven categories:

1. Planning. The most common purpose of notification seems to be to generate information to allow better planning. This planning may involve better routes, better safety regulations, or improved emergency response capabilities. Information for planning can be gathered through prenotification or reporting. In many cases, particularly among states, such information seems to be used for the intended purpose. In other cases, however, the information is simply filed and has not been used for any of the intended planning activities. Many of the localities with notification requirements have never received a notification, and thus no planning has ever occurred.

2. Emergency response. A common purpose for prenotification requirements is to facilitate emergency response by alerting the appropriate groups when a shipment of radioactive or other hazardous materials is in the area. Several of the state laws and most of the local and facility laws mention this purpose. In some cases, these laws have been used for the intended purpose. However, most of the localities have never received a notification and hence have never used their laws for this purpose.

3. Escorts. Prenotification can also be used to arrange escorts for shipments. This purpose is most common among the facilities, for which the escorts help to reduce the chance of an accident by warning other vehicles of the presence of the shipment. Officials at several facilities commented that the prenotification requirements allow them to have escorts available when the shipment arrives. Without such notice, the vehicles would have to park alongside the road until an escort was available, delaying the shipment and increasing the probability of accidents. Facilities tend to be flexible in how much advance notice is required.

4. Shipment awareness. Notification requirements are valuable to some states and localities because they allow officials to be aware of shipments through their jurisdictions. This allows the

officials to respond to requests for information from elected officials, the press, or the general public. It also may increase public confidence if citizens believe that state or local officials are aware of shipments of hazardous materials, even if no substantive use is made of the information. This purpose is best served by prenotification requirements, although general shipment awareness can also be provided through reporting mechanisms. Shipment awareness was most frequently mentioned by state officials, particularly those contacted as part of the NRC case study.

5. Inspection. A few prenotification laws are intended to allow shipments to be inspected to ensure that safety standards are met. Governments with such laws tend to use them for this purpose. Some instances were cited where such inspections revealed faulty equipment or inadequate packaging.

6. Tracking. Notification provisions for hazardous wastes usually are intended to ensure that such materials are disposed of properly. These provisions usually work in one of two ways. Some require shippers, carriers, and receivers to file reports on each trip (often copies of manifests) so that shipments can be tracked to ensure that they are delivered to approved facilities. Other requirements stipulate that periodic reports be filed that can be matched with individual trip reports. Both of these purposes are usually achieved in practice, although some agencies noted that manpower shortages have prevented them from doing as much matching as would be possible. Tracking is done exclusively at the state level.

7. Bans. Some state and local officials and carrier representatives believe that many prenotification requirements are intended to prevent shipment of radioactive materials. This implicit purpose was most often cited for local laws, the preponderence of which require notification a week or more in advance. While no local official would admit that this was the purpose of the law in his or her jurisdiction, it seems to have worked in some cases since

shippers and carriers have rerouted shipments to avoid such locations.

6.3 IMPACTS OF NOTIFICATION REQUIREMENTS

Notification requirements have differing impacts on carriers and shippers depending upon the type of requirement and the range of commodities covered. Prenotification requirements seem to be the most burdensome if they require notification more than a few hours in advance or if they require some sort of written submittal. Requirements of this type are most common among localities, many of which require notification a week or more in advance. Prenotification requirements imposed by facilities are much less difficult to comply with since they usually require only a telephoned notification within an hour or two of the arrival of the vehicle.

Periodic reporting imposes a different set of burdens on carriers and shippers. It does not require advance planning as is the case for prenotification, nor does it have the potentials for delaying or rerouting shipments. Periodic reporting does generate a considerable amount of paperwork, however, since carriers and shippers must retain records and prepare reports.

Per trip reporting, which usually involves filing of manifests, may be the least burdensome system since no additional planning or forms are required. Carriers and shippers simply mail copies of shipping papers to the appropriate agencies. Per trip reporting usually increases mailing and personnel expenses, since every trip must be reported separately. This is especially significant since requirements of this type tend to cover more shipments than are covered by prenotification laws.

Carriers and shippers report that existing notification requirements do have some impacts on their operations. They commented that it is often difficult to find out about such laws, that compliance with the laws can delay shipments, and that the laws have increased the amount of paperwork they must prepare. Some carriers have rerouted shipments to avoid areas with notification laws, or refuse to serve areas with these requirements.

Despite this, the major concern of shippers and carriers is not with existing notification laws, but with the implications of similar laws being adopted throughout the U.S. The impacts of piecemeal adoption of dissimilar requirements would be extremely significant, since they would inevitably create scheduling difficulties and lead to substantial increases in paperwork. The American Trucking Associations does accept some type of state-level notification system for especially hazardous materials, such as is currently embodied in the NRC requirements. Several carriers supported this view, but strongly preferred a reporting requirement in lieu of prenotification.

6.4 NOTIFICATION IN CONTEXT

Notification requirements are one way for states, localities, and facilities to collect information about shipments of radioactive or other hazardous materials through their jurisdictions. It should be remembered, however, that a variety of other approaches for information gathering exist, and that each of these approaches has its advantages and disadvantages. Among the alternatives to notification are highway counts, weigh station counts, and surveys of carriers and industries.

The fundamental finding of this survey and analysis of notification requirements is that many states, localities, and facilities are interested in gathering information about shipments of radioactive and other hazardous materials. These governments intend to use the information they receive from notifications for a variety of purposes ranging from careful planning to awareness of shipments. The majority of governments, particularly among the states and facilities, do use the information for these purposes. It has not yet been determined, however, what approach is best for collecting such information, nor has it been determined whether the benefits of the information outweigh the burdens imposed on shippers and carriers by notification requirements.

APPENDIX A

Selected Hazardous Materials Definitions Used in Federal Regulations

Selected Hazardous Materials Definitions Used in Federal Regulations

This appendix summarizes a few terms used in federal regulations to define types of hazardous materials. Many of these definitions have been used by state and local governments in developing their notification laws. Most of the definitions in this appendix apply to radioactive materials, although a small section at the end describes the various categories of explosives.

1. Fissile radioactive material - plutonium-238, plutonium-239, plutonium-241, uranium-233, uranium-235, or any material containing any of these materials. [49 CFR 173.389]

   Packages of such material are classified according to the measures needed to ensure their safe transportation. The classifications are as follows:

   Fissile Class I - packages that may be transported in unlimited numbers and in any arrangement, and which require no nuclear criticality safety controls during transportation (i.e., have a transport index of not less than 0.1 or more than 10).

   Fissile Class II - packages that may be transported together in any arrangement but in numbers which do not exceed an aggregate transport index of 50.

   Fissile Class III - shipments of packages that do not meet the requirements of Fissile Class I or II and which are controlled to provide nuclear criticality safety in transportation by special arrangements between the shipper and the carrier.

2. Transport Group - any one of 7 groups into which normal form radionuclides are classified according to their radiotoxicity and their relative potential hazard in transportation. [49 CFR 173.390]

3. Limited Quantity radioactive materials indicates a quantity of materials that has an aggregate radioactivity not exceeding the following amounts:

Transport Group	Limited Quantity (millicuries)
I	0.01
II	0.1
III	1.0
IV	1.0
V	1.0
VI	1.0
VII	25.0
Special Form	1.0

Limited quantity also includes trititum oxide in aqueous solution with a concentration not greater than 0.5 millicuries per milliliter and with a total activity per package of not more than 3 curies; and not more than 15 grams of uranium-235. [49 CFR 173.391(a)]

4. Highway Route-Controlled Quantity (formerly Large Quantity) radioactive materials indicates a quantity of materials having an aggregate radioactivity exceeding the following amounts: [49 CFR 173.389(b)]

Transport Group	Large Quantity (curies)
I	20
II	20
III	200
IV	200
V	5,000
VI	50,000
VII	50,000
Special Form	5,000

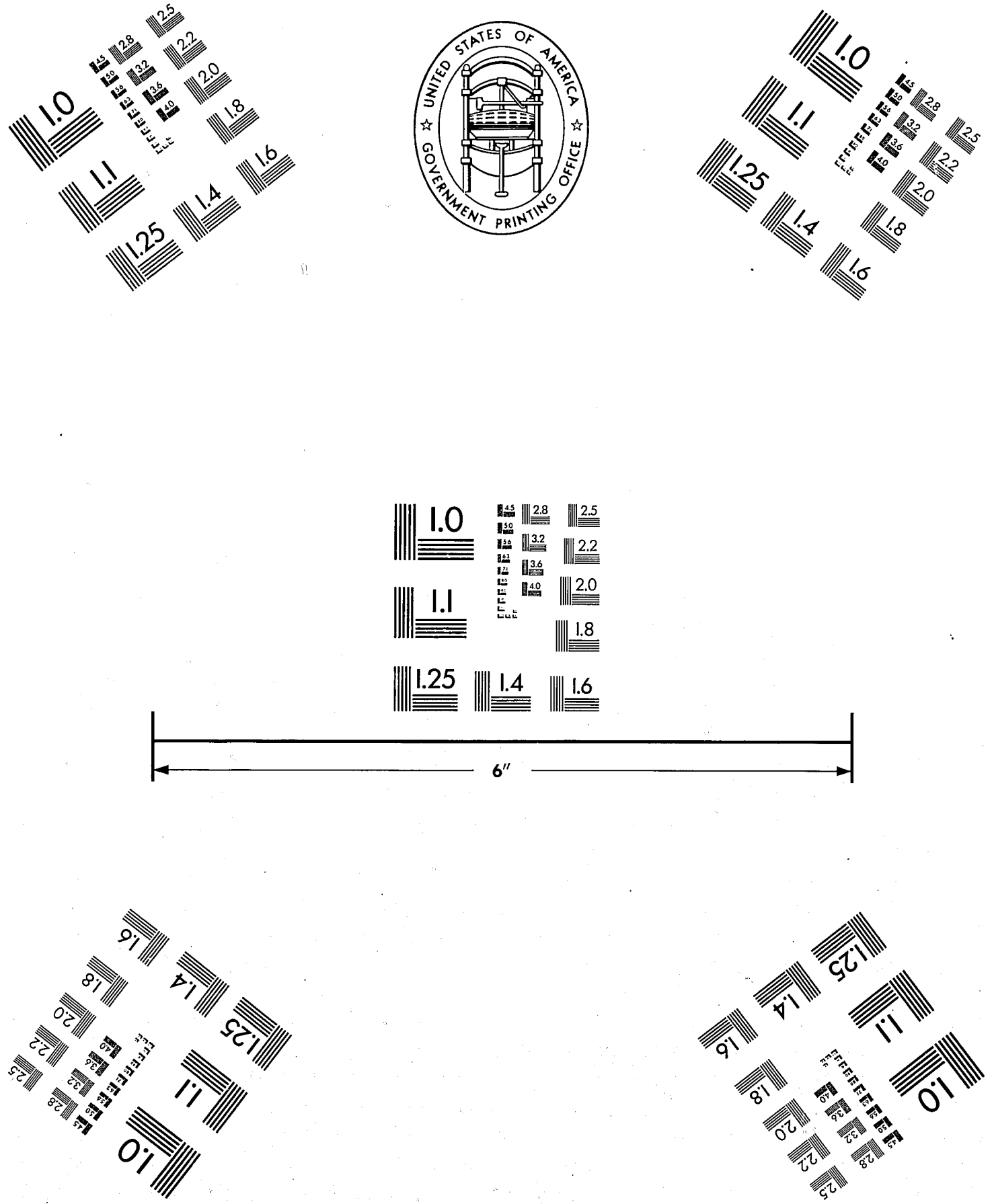
5. Transport Index - the number placed on a package to designate the degree of control to be exercised by the carrier during transportation. [49 CFR 173.389(i)]

6. Type A Packaging - packaging designed in accordance with the general packaging requirements of 49 CFR 173.24 and 173.393, and that is adequate to prevent the loss or dispersal of the radioactive contents and to retain the efficiency of its radiation shielding properties if the package is subject to the tests prescribed in 49 CFR 173.398(b) (e.g., various environmental conditions, free drop, corner drop, penetration, compression). [49 CFR 173.389(j)]

7. Type B Packaging - packaging that meets the standards for Type A Packaging as well as for hypothetical accident conditions of transportation as prescribed in 49 CFR 173.398(c) (e.g., free drop, puncture, thermal, water immersion). [49 CFR 173.389(k)]

8. Type A Quantity and Type B Quantity radioactive materials indicate quantities that have an aggregate radioactivity not greater than the following amounts: [49 CFR 173.389(l)]

Transport Group	Type A Quantity	Type B Quantity
I	0.001	20.0
II	0.05	20.0
III	3.0	200.0
IV	20.0	200.0
V	20.0	5,000.0
VI	1,000.0	50,000.0
VII	1,000.0	50,000.0
Special Form	20.0	5,000.0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9. Explosives

Class A - detonating or otherwise of maximum hazard types. [49 CFR 173.53]

Class B - flammable hazard types (explosives that, in general, function by rapid combustion rather than detonation). [49 CFR 173.88]

Class C - minimum hazard types (certain types of manufactured articles that contain Class A or Class B explosives or both, as components--in restricted quantities--and certain types of fireworks). [49 CFR 173.100]

APPENDIX B

Unconfirmed Notification Requirements

UNCONFIRMED PRENOTIFICATION REQUIREMENTS

A variety of notification requirements that were included in previous compilations or were mentioned by shippers, carriers, or government officials have been rescinded or do not exist. This appendix lists the jurisdictions involved; the citation provided, if any; the individual contacted to check on the requirement; and the reason why the supposed notification requirement was not included in the report.

Jurisdiction	Citation	Contact	Remarks
ALABAMA			
State	Ala. Sec. 4-265, 4-270.		Rescinded.
ALASKA			
Fairbanks		Clerk	Has no notification requirements.
CALIFORNIA			
State	Cal. Admin. Code, Tit. 22, Ch. 30.		Not a notification requirement.
Calif. Bridges		Highway Patrol	No notification requirements.
Oakland		Health Dept.	No jurisdiction over state highways.
DELAWARE			
Delaware Tpke		DE Tpke Authority	Has no notification requirements.
FLORIDA			
Fort Walton Beach		Police	Only encountered situation once with Air Force. No requirements.
Key West		Police, City Clerk	Has no notification requirements.
Tampa		Fire Dept.	Has no notification requirements.

Jurisdiction	Citation	Contact	Remarks
IDAHO			
Lewiston		Fire Dept.	Has no notification requirements.
ILLINOIS			
State	Ill. Rev. Stat. Ch. 111 1/2, Sec. 218b. Public Act 81-1516, Art. I, Sec. 3.	Governor's Designee	Dropped by state after approval of 10 CFR 73.
INDIANA			
Indiana Toll Road		Toll Road	No regulations beyond federal; dropped them a few months ago.
KANSAS			
Wichita		City Attorney	Not a notification requirement.
LOUISIANA			
New Orleans		Fire Dept.	Has no notification requirements.
MARYLAND			
Kent County		County Clerk	County officials unaware of such law.
MASSACHUSETTS			
Newton		City Clerk	Only routing restrictions.
MICHIGAN			
State	Mich. R325.5914		Not a notification requirement.
State	Mich. Amends Act No. 207 (Public Acts of 1941), Sec. 29.3c		Only gives authority to set regulations.

Jurisdiction	Citation	Contact	Remarks
MICHIGAN (continued)			
State	Mich. Compiled Laws (Amends Act No. 380 & 368, Sec. 16.109, 333.2233, 333.13521)		Only gives authority to set regulations.
Sault Ste. Marie Bridge		Bridge Authority	Not a notification requirement; requires a permit only.
MISSISSIPPI			
State	Miss. 17-17-35; Reg. Sec. 6	Governor's Designee	Adopts federal regulations.
Jackson	City Ord.	City Clerk	City officials say no such ordinance exists.
NEBRASKA			
Lincoln		Police Dept.	Has no notification requirements.
NEVADA			
Beatty		City Clerk	Has no notification requirements.
NEW JERSEY			
Suffold Township			No such township in NJ.
NEW MEXICO			
Mescalero Indian Reservation		Reservation	May have notification requirements, but officials were uncertain and did not provide information as requested.

Jurisdiction	Citation	Contact	Remarks
NEW YORK			
State	NY Ch. 641		Not specifically applicable to hazardous or radioactive materials.
State	NY Res. 133	Governor's Designee	Officials claim no state regulations exist; follow DOT requirements.
Nassau County		Police Dept.	Has no notification requirements.
Rome		Police Dept.	Requests escorts sometimes; no regulation or agreement.
Suffolk County		County Clerk	Ordinance prohibits transport of hazardous waste.
NORTH DAKOTA			
State	ND 33-10-03-07-4-a--e, ND 33-10-03-06-1&2	Dept. of Health	Dept. of Health claims no notification requirements exist for hazardous or radioactive materials. Furthermore, no such form exists for ND citations.
Fargo		City Attorney, Police Dept., Civil Defense Office	Used to charge for escort of explosives; no notification requirements now exist.
OHIO			
Dayton		Police Dept.	Has no notification requirements.
Lakewood		Town Clerk	Has no notification requirements.

Jurisdiction	Citation	Contact	Remarks
OHIO (continued)			
Lyndhurst		City Clerk	Has no notification requirements.
Middlebury Heights		Police Dept.	Has no notification requirements.
Olmstead Falls		Town Clerk	Has no notification requirements.
Richmond Heights		Town Clerk	Only a resolution urging the Governor to adopt regulations.
OKLAHOMA			
Oklahoma City		City Attorney	Proposed an ordinance in 1980, but never passed it.
Tulsa		City Attorney	Proposed an ordinance in 1980, but never passed it.
OREGON			
State	Or. R. B. 80(a)		Not a notification requirement.
State	Or. R. 354		Not a notification requirement.
PENNSYLVANIA			
Philadelphia		City Clerk	Currently considering adopting a notification requirement.
SOUTH CAROLINA			
Anderson County		Sec. of Council	Has no notification requirements.
Columbia		Police Dept.	Had a notification requirement for hazardous materials, but lifted it a few years ago.

Jurisdiction	Citation	Contact	Remarks
SOUTH DAKOTA			
State	SD 34-21, 1&2		Adopts federal regulations.
State	SD 74:30:01:01 - 74:30:07:04		Adopts federal regulations.
TENNESSEE			
Nashville		Police and Health Depts.	Has no notification requirements.
TEXAS			
Dallas		City Clerk	No notification requirements; does restrict routes, though.
El Paso		City Clerk	Not a notification requirement.
Galveston		City Clerk	Has no notification requirements.
Laredo		City Clerk	Not a notification requirement.
Marshall		Police Dept.	Has no notification requirements.
Port Arkansas		Ferry	Only prohibits flammable gas and explosives; no notification requirements.
VIRGINIA			
Chesapeake		Traffic Bureau	Never heard of notification.
Nasamond		City Clerk	Only have state regulations.
DISTRICT OF COLUMBIA			
Washington		Police Dept.	Doesn't come up since shipments go around city on the Beltway.

Notes

1. In certain fields of law, the federal government has the power to eliminate or supersede state and local laws. This usually occurs in fields expressly reserved to the federal government in the Constitution, or in fields where Congress has explicitly or implicitly decided to impose a set of federal standards in lieu of state or local ones. This general effort is usually referred to as "preemption." More strictly, however, preemption occurs only when a court rules that a state or local law is superseded by federal law and thus cannot be enforced. The U.S. Department of Transportation has established a process for issuing interpretations (known as "inconsistency rulings") of the application of preemption to particular state and local laws. While these rulings are not legally binding, they have been given considerable weight. The issue of preemption is a complex one, and will not be explored in this report.

2. 48 Fed. Reg. 760 (January 6, 1983).

3. 49 Fed. Reg. 46632 - 46667 (November 27, 1984).

4. City of Indianapolis, Emergency Management Division. Final Report: Demonstration Project to Develop A Hazardous Materials Accident Prevention and Emergency Response Program, Phase 1, October 1, 1983, pp. 52-60.

5. Association of Bay Area Governments. San Francisco Bay Area Hazardous Spill Prevention and Response Plan, Vol. 2, December 1982, pp. 6-8.

6. Resource Communities, Inc. New Mexico Hazardous Materials Transportation Survey and Incident Analysis, SAND 84-7146, October 1984.

7. City of New Orleans, Office of Analysis and Planning. Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program for the City of New Orleans, Phase I, January 27, 1983, pp. 5-6.

8. Wendell Knight. Development of an Hazardous Materials Accident Prevention and an Emergency Response Program, Vol. 1, May 1983, pp. 6-7.

9. Stephen Odojewski and Randolph Rakoczynski. Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program, April 1983, pp. 3-2 -- 3-3.

10. Raymond Holmes, et al. Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program for the State of Massachusetts, Vol. I, May 7, 1982, pp. 4-32 -- 4-39.

11. 49 U.S.C. Secs. 1801-1812.

12. 42 U.S.C. Secs. 2011-2296.

13. 42 U.S.C. Secs. 5801-5891.

14. 49 U.S.C. Sec. 1811.

15. 46 Fed. Reg. 5298 (January 19, 1981).

16. 46 Fed. Reg. 5299 (January 19, 1981).

17. 46 Fed. Reg. 5317 (January 19, 1981).

18. 45 Fed. Reg. 7152 (January 31, 1980).

19. P.L. 96-295, Sec. 301.

20. 48 Fed. Reg. 760 (January 6, 1983).

21. 10 C.F.R. Sec. 73.37(b)(1).

22. P.L. 96-295, Sec. 301(a).

23. 45 Fed. Reg. 81058 (December 9, 1980).

24. 47 Fed. Reg. 600 (January 6, 1982).

25. U.S., Nuclear Regulatory Commission. Advance Notification of Shipments of Nuclear Waste and Spent Fuel, NUREG-0923, June 1982, p. 1.

26. P.L. 96-295, Sec. 301(a).

27. 45 Fed. Reg. 81059 (December 9, 1980).

28. 47 Fed. Reg. 603 (January 6, 1982).

29. 47 Red. Reg. 603 (January 6, 1982).

30. The most recent version of this list is included in U.S., Nuclear Regulatory Commission, Office of State Programs. "Individuals Receiving Advance Notification of Nuclear Waste Shipments," August 1983.

31. P.L. 94-580.

32. Ark. Stat. Ann. Sec. 82-4222(d).

33. Ark. Hazardous Waste Management Code Sec. 16(c).

34. Ark. Hazardous Waste Management Code. Sec. 16(o).

35. Ark. Hazardous Waste Management Code Sec. 16(p).

36. Ark. Hazardous Waste Management Code Sec. 16(s)(E).

37. Ark. Hazardous Waste Management Code Sec. 16(u)(3).

38. Ark. Hazardous Waste Management Code Sec. 16(w).

39. Ark. Hazardous Waste Management Code Sec. 16(bb)(4).

40. Fla. Admin. Code Sec. 10D-63.141.

41. Fla. Admin. Code Sec. 10D-63.142(1)-(4).

42. Fla. Admin. Code Sec. 10D-63.142(5).

43. Fla. Admin. Code Sec. 10D-63.142(5).

44. Ga. Code Ann. Sec. 95A-1304a (3)(A).

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